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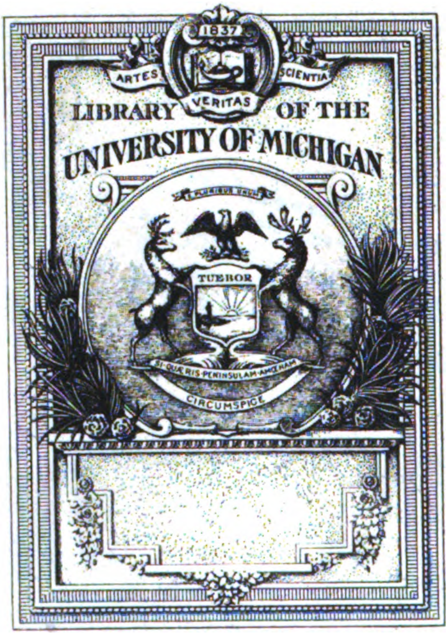
Annual report

New York (State) Dept. of Agriculture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STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

TWENTIETH ANNUAL REPORT

OF THE

Department of Agriculture

For the Year Ending September 30, 1912

PART III

TRANSMITTED TO THE LEGISLATURE JANUARY 15, 1913

ALBANY
J. B. LYON COMPANY, PRINTERS
1913

STATE OF NEW YORK

No. 29

IN ASSEMBLY

JANUARY 15, 1913.

TWENTIETH ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

PART III

To the Honorable the Legislature of the State of New York:

Pursuant to the provisions of the Agricultural Law, I herewith submit this, Part III of the Twentieth Annual Report of the Department of Agriculture of the State of New York, for the year ending September 30, 1912.

CALVIN J. HUSON,
Commissioner of Agriculture.

January 15, 1913.

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STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 33

Owners of
Pure-Bred Live Stock
in
New York

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INTRODUCTORY STATEMENT

The increasing interest in animal husbandry in the state of New York makes timely the publication of this list of owners of pure-bred live stock in New York State. The data for this bulletin was obtained by and compiled under the direction of my predecessor, Honorable Raymond A. Pearson. The bulletin contains a list of all the breeders and owners of pure-bred registered animals within the state, so far as they have come to the knowledge of this department. While the list is not to be taken as a complete roster of breeders and owners, it is hoped that the bulletin will be found useful to those who contemplate the purchase of pure-bred animals. Doubtless the list contains errors and omissions, as must a publication of this kind. The Department of Agriculture will be glad to have any person engaged in the breeding of pure-bred animals notify it of errors and omissions and submit suggestions which may make future bulletins more complete and useful.

Our own breeders of pure-bred animals are among the foremost in the country to-day. It is hoped that intending purchasers will correspond with the breeders whose names are contained in this bulletin, as the department believes that within the borders of New York will be found stock representing the highest types of the various breeds and possessing the additional advantage of having been bred and raised under New York State conditions.

CALVIN J. HUSON,
Commissioner.

KEY TO COUNTY ABBREVIATIONS

Albany	Alb.
Allegany	Alg.
Broome	Brm.
Cattaraugus	Cat.
Cayuga	Cay.
Chautauqua	Cha.
Chemung	Chm.
Chenango	Chn.
Clinton	Cli.
Columbia	Col.
Cortland	Cor.
Delaware	Del.
Dutchess	Dut.
Erie	Ere.
Essex	Esx.
Franklin	Fr.
Fulton	Ful.
Genesee	Gen.
Greene	Grn.
Hamilton	Ham
Herkimer	Her.
Jefferson	Jef.
Kings	Kgs.
Lewis	Lws
Livingston	Liv.
Madison	Mad.
Monroe	Moe.
Montgomery	Mtg.
Nassau	Nas.
New York	N. Y.
Niagara	Nia.
Oneida	Oni.
Onondaga	Ono.
Ontario	Ont.
Orange	Ora.
Orleans	Orl.
Oswego	Osw.
Otsego	Ots.
Putnam	Put.
Queens	Que.
Rensselaer	Ren.
Richmond	Ric.
Rockland	Roc.
St. Lawrence	St. L.
Saratoga	Sar.
Schenectady	Scy.
Schoharie	Sco.
Schuyler	Scu.
Seneca	Sen.
Steuben	Stu.
Suffolk	Suf.
Sullivan	Sul.
Tioga	Tio.
Tompkins	Tom.
Ulster	Uls.
Warren	War.
Washington	Was.
Wayne	Way.
Westchester	Wes.
Wyoming	Wyo.
Yates	Yat.

OWNERS OF PURE-BRED LIVE STOCK

IN

NEW YORK

HORSES

AMERICAN TROTTER

American Trotting Register Association,
W. H. Knight, Sec'y-Treas.,
137 *South Ashland Ave., Chicago, Ill.*

Name Address County	Number Owned
Aldrich, Dr. John O., Bath....Steuben	14
Allison's Island Farm, Waddington, St. Lawrence	9
Austin Bros., Salem.......Washington	4
Baker, A. M., Machias.....Cattaraugus	1
Barker, Clarence W., 58 Thurston Ave., Ithaca ....Tompkins	1
Benedict, Harry L., Minetto....Oswego	3
Benington, Chas., Edmeston.....Otsego	†4
Bresee, S. K., Syracuse......Onondaga	1
Bush, Seth J. T., Morton......Orleans	1
Cobb, William, Spring Mills...Allegany	..
Cotton, J. C., Almond........Allegany	2
Covell, W. B., Pope Mills..St. Lawrence	1
Dempsey, Wm. H., Waterloo....Seneca	3
Dennis, R. W., Jasper.........Steuben	3
Dickerman, W. B., Mamaroneck...Wes.	30
Doan, Judson H., Gouverneur....St. L.	2
Ellis, Ralph, Jericho...........Nassau	1
Ford, J. Howard, Stony Ford...Orange	30
Gifford, W. H., E. Syracuse..Onondaga	†20
Gillis, A. R., Syracuse.......Onondaga	20
Hackett, J. M., Champlain.....Clinton	1
Hale, Wm. B., Rochester......Monroe	..
Higley, A. M., Smith Basin.Washington	3
Hill, V. Edgar, Stony Ford.....Orange	6
Hillman, Wm. M., E. Bethany..Genesee	2
Ideal Stock Farm, E. Aurora......Erie	8
Jameson, G. A., M. D., South Wales, Erie	1
Jeffrey, Geo. C., Albion........Orleans	1
Jones, Ira W., Est., Alfred....Allegany	†2
Kellogg, O. U., Cortland......Cortland	6
Kiel, E. H. A., Stevensville....Sullivan	3
Kingsbury Homestead, Oswego..Oswego	1
Lathrop, J. A., Freeville.....Tompkins	2
McKay, Mrs. James B., 328 West 96th St., New York.............New York	1
McLees, J. H., Ithaca......Tompkins	2
Marshall, James S., Johnsonville..Ren.	†4
Morris, Elmer C., Alpine.....Schuyler	6
Painchand, E., Champlain.....Clinton	1
Patchin, Burt. C., Wayland...Steuben	†17
Peasley, Wallace A., Huntersland..Alb.	1
Pendergast, S. C., Phoenix..Onondaga	4
Phillips, D. J., E. Greenbush.....Ren.	1
Phillpott, Edgar, Hoosick Falls..Ren.	3
Phinney, Scott E., Wadhams....Essex	4
Plester, Chas. J., Ancram....Columbia	3
Pitkin, J. P., Friendship.....Allegany	1
Rathbun, F. G., Verona........Oneida	3
Rhodes, Ona M., Etna......Tompkins	1
Risley, E. E., Walton.......Delaware	9
Ritter, Sidney A., Geneva.....Ontario	1
Rowland, Myron O., 120 W. LaFayette Ave., Syracuse...........Onondaga	2
St. John, M., Lyndonville.....Orleans	4
Simpson, William, Cuba......Allegany	120
Sinclair, A. J., Kanona.......Steuben	1
Snow, Eugene, Knoxboro.......Oneida	30
Stickles, H. H., Claverack...Columbia	1
Story, Chas. H., Catskill......Greene	3
Thomas, Seward, Adams.....Jefferson	2
Townsend, Stanton, Friendship...Alg.	4
Walsh, John, Babcock Hill.....Oneida	1
Weatherby, J. C., Trumansburg..Tom.	6

AMERICO-ARAB

Cleaveland, F. H., Poughkeepsie...Dut.	†17

ARABIAN

The Arabian Horse Club of America,
H. K. Bush-Brown, Sec'y-Treas.,
1729 *G St., N. W., Washington, D. C.*

Brown, Archer H., So. New Berlin..Chn.	2
Cleaveland, F. H., Poughkeepsie..Dut.	†5
Lane, Barent H., Coxsackie.....Greene	2

BELGIAN DRAFT

The American Association of Importers and
Breeders of Belgian Draft Horses,
J. D. Connor, Jr., Sec'y-Treas.,
Wabash, Ind.

Averill, C. S., Syracuse......Onondaga	1
Bogue, Nelson, Batavia.......Genesee	†4
DeWitt, M. A., Binghamton....Broome	6
Givens, Mead N., Groton....Tompkins	1
Hall, J. E., Westfield......Chautauqua	6
Hamilton Horse Co., Hamilton...Mad.	1
Horton, E. E., Binghamton....Broome	1
Marshall, Wm., Sherwood......Cayuga	1
Miner, W. H., Chazy..........Clinton	20
Raymer, Fred C., Sodus........Wayne	1
Scanlow, James R., Hammond...St. L.	1
Sutphen, G. A., Shortsville....Ontario	11
Suydam, Geo. B., Montgomery..Orange	3
Swain, W. E., Swain........Allegany	4
Westfield Belgian Horse Co., Westfield, Chautauqua	1

CLEVELAND BAY

Cleveland Bay Society of America,
R. P. Stericker, Sec'y.,
Oconomowoc, Wis.

Brown, W. S., Elbridge......Onondaga	1
Jewett, C. H., & Son, Oriskany Falls, Oneida	1

CLYDESDALE

The American Clydesdale Association,
R. B. Ogilvie, Sec'y.,
Union Stock Yards, Chicago, Ill.

Allison's Island Farm, Waddington, St. Lawrence	4
Barrett, G. W., Wellsville....Allegany	1
Hornell Clydesdale Breeding Association, Hornell ....Steuben	1
Letchworth & Delano, Ensenore...Cay.	1
Petrie, Henry J., Attica......Wyoming	3

† Including pure-bred, not registered.

Quimby, John G., Brewster....Putnam	2
Stewart, Wm. H., Olean...Cattaraugus	7
Swain, W. E., Swain........Allegany	1
Thompson, Jesse, & Son, Lisbon. St. L.	1
Zimmer, Louis, Lafargeville.......Jef.	1

French Coach

French Coach Horse Society of America,
Duncan E. Willett, Sec'y-Treas.,
Oak Park, Ill.

Ashline, C. R., Champlain.....Clinton	1
Dwight, P. L., De Ruyter.....Madison	1
Edsall, J. P., Pine City.....Chemung	3
Freemyer, Frank, Middleburg.....Sco.	1
Huson, Calvin J., Penn Yan.....Yates	1
McLees, J. H., Ithaca.......Tompkins	1
Parsons, George E., Berkshire...Tioga	3
Sanford, S., & Sons, Amsterdam..Mtg.	1
Scranton, Homer A., Fernwood...Osw.	1

French Draft

National French Draft Horse Association,
C. E. Stubbs, Sec'y.,
Fairfield, Ia.

Clark, S. S., Eaton..........Madison	1

German, Hanoverian and Oldenberg Coach

German, Hanoverian and Oldenberg Coach
Horse Association of America,
J. Crouch, Sec'y-Treas.,
LaFayette, Ind.

Brown, Eugene D., Scottsville....Moe.	1
Gutchess, Louis W., Port Byron..Cay.	*1
Sutphen, G. A., Shortsville....Ontario	6
Teeter, Arthur J., Ithaca....Tompkins	4
Teeter, Chas. A., Ithaca, R. D. 5..Tom.	8
Vandeveer Bros., Fultonville.....Mtg.	1

Hackney

American Hackney Horse Society,
Gurney C. Gue, Sec'y-Treas.,
460 *Fulton Ave., Hempstead, N. Y.*

Allison's Island Farm, Waddington. St. Lawrence	18
Boldt, G. C., Alexander Bay..Jefferson	1
Brewster, Geo. R., Newburg....Orange	12
Brown, Eugene D., Scottsville..Monroe	1
Clark, Stephen, Batavia......Genesee	2
Cornell University, Ithaca...Tompkins	1
Doremus, Geo. S., Merrifield...Cayuga	*1
Edsall, J. B., Pine City......Chemung	18
Gillis, A. R., Syracuse......Onondaga	30
Hackett, J. M., Champlain.....Clinton	1
Harrington, Deat J., Cincinnatus..Cor.	1
Hoffman, Lewis C., Dansville.....Liv.	1
Johnson, Harrington W., Caledonia, Livingston	1
Klinck, Edwin C., Buffalo........Erie	1
Letchworth & Delano, Ensenore..Cay.	3
Mackay, Clarence H., Roslyn...Nassau	6
Millard & Keenan, Oneonta....Otsego	3
Miller, Mrs. H. C., Deposit....Broome	21
Newman, Ray C., Phelps......Ontario	6
Ritter, Sidney A., Geneva.....Ontario	1
Smith, Alfred H., Smith's Basin..Was.	3
Stevens, F. C., Attica.......Wyoming	92
Sutphen, G. A., Shortsville....Ontario	14
Walsh, John, Babcock Hill....Oneida	1
Weiffenbach, Adam, 2039 Washington Ave., New York..........New York	1
Willis, Harrison, 374 Ocean Parkway, Brooklyn .... Kings	†7

Irish Hunter

Ellis, Ralph, Jericho..........Nassau	2

Morgan

American Morgan Registry Association,
Thomas E. Boyce, Sec'y.,
Middlebury, Vt.

Arthur, Chas. H., Peru........Clinton	4
Bogue, Nelson, Batavia.......Genesee	†6
Brown, H. L., Carlton........Orleans	2
Crandall, John M., Jamestown, R. D. 83 ....Chautauqua	1
Dunlap, W. R., Fayetteville......Ono.	1
Gibbs, D. Z., Wheeler........Steuben	2
Halliday, C. W., No. Chatham.....Col.	3
Lormor, James E., Dryden..Tompkins	..
McAvoy, E. F., Cambridge.......Was.	12
Morhous, Dell, Willsboro.......Essex	†6
Mosher, E. W., Aurora........Cayuga	1
Munro, Frank, & Son, Jordan.....Ono.	1
Pennell, Wm. T., Honeoye.....Ontario	1
Sawyer, L. N., Big Flats.....Chemung	3
Sisson, Milton B., Almond....Allegany	2
Stillman, C. C., Cornwall-on-Hudson, Orange	11

Percheron

The American Breeders and Importers
Percheron Registry Company,
John A. Forney, Sec'y-Treas.,
Plainfield, Ohio.

Percheron Society of America,
Wayne Dinsmore, Sec'y.,
Chicago, Ill.

Alfred University, Alfred....Allegany	5
Allen, M. L., Niobe.......Chautauqua	1
Averill, C. S., Syracuse.....Onondaga	1
Bagg, Ralph F., Bliss.......Wyoming	1
Bailey, Leslie, Bath..........Steuben	2
Baker, Charles H., Peekskill......Wes.	6
Barber, Bert G., Bath........Steuben	2
Benedict, Harry L., Minetto...Oswego	1
Bennett, Chas. O., Hilton......Monroe	6
Bigelow, F. E., Whallonsburg...Essex	1
Blewer, Fred A., Owego........Tioga	4
Blewer, Geo. F., Newark Valley..Tioga	2
Boardway, M. H., Lawton........Erie	1
Bogart, E. L., Spencer..........Tioga	1
Bogue, Nelson, Batavia.......Genesee	†6
Bowen, Ida, Mrs., Holley......Orleans	1
Braith, J. V. D. H., Jerusalem....Alb.	2
Brown, Archer H., So. New Berlin, Chenango	3
Brown, L. H., Hammondsport..Steuben	1
Brownell, Harry E., Schaghticoke..Was.	1
Burke, John, Ilion..........Herkimer	2
Cavert, J. E., Galway.......Saratoga	6
Chapin, R. E., & Son, Batavia....Gen.	3
Clarke, S. W., Andover......Allegany	1
Cooley, A. H., Little Britain...Orange	2
Cooper, Joseph, & Son, Perry....Wyo.	16
Cornell University, Ithaca...Tompkins	8
Crandall, John M., Jamestown, R. D. 83 .... Chautauqua	3
Cross, O. E., & Son, Niobe........Cha.	1
Dewey, John M., Turin........Seneca	1
Dievendorf, A. H., Sprakers......Mtg.	3
Dudley, Eugene, Cuba.......Allegany	1
Dudley, E. W., Cuba.........Allegany	1
Evans, Fred, Lebanon........Madison	1
Fisher, H. H., Spencer..........Tioga	2
Foxton, H. C., Syracuse....Onondaga	1
Gelder, Jay, Kanona.........Steuben	5
Gray, G. F., Lima.........Livingston	13
Ham, Eugene, Verbank......Dutchess	10

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† Including pure-bred, not registered. * Part ownership.

Ham, John M., Millbrook	Dutchess	4
Hanks, Otis, Friendship	Allegany	6
Hicks, Lewis, Ensenore	Cayuga	1
Hillman, Wm. M., E. Bethany	Genesee	2
Hilsinger, Wm. B., McLean	Tom.	1
Horner, J. G., Lamson	Onondaga	1
Houghtaling, Perry E., Woodhull	Stu.	1
Howe, A. D., Whitesville	Allegany	1
Hunt, B. R., Canastota	Madison	1
Hurd, Melville J., Elma	Erie	1
Jackson, J. A., Holley	Orleans	4
James, E. T., & Son, Cuba	Allegany	4
Johnson, A. B., Caledonia	Livingston	6
Jones, C. W., Dayton	Cattaraugus	4
Karr, S. S., & Son, Almond	Allegany	4
Kelkenberg, Chas., Jr., Clarence Center,	Erie	1
King, H. T., Chittenango	Madison	2
Kreidler, Walter, & Son, Hornell	Stu.	2
Lagrange, C. C., Albany	Albany	7
Love, Darwin J., Holley	Orleans	1
McCurdy, Fred E., Dansville	Liv.	6
McNeil, Geo. T., Theresa	Jefferson	2
McWhorter, Wm., Argyle, R. D. 3,	Washington	2
Mahaffy, D. A., Argyle	Washington	3
Martin, Barton, Clarence Center	Erie	14
Martin, D. E., Delavan	Cattaraugus	4
Martin, Levi, Clarence Center	Erie	2
Martin, W. P., & Son, Delevan	Cat.	4
Mellen, C. R., Geneva	Ontario	1
Merz, Frank, Jamestown	Chautauqua	6
Miller, G. W. & C. P., So. Byron	Gen.	3
Miner, W. H., Chazy	Clinton	42
Mohegan Farm, Peekskill	Wes.	6
Mulvihill, John J., Brookton	Tom.	4
Owen, Frank S., Akron	Erie	*1
Parke, D. J., Van Etten	Chemung	†4
Parmelee, J. M., Dayton	Cattaraugus	4
Parsons, Robert S., Binghamton	Brm.	1
Percheron Horse Co., Hudson Falls,	Washington	1
Perry, L., & Son, Warsaw	Wyoming	2
Phillips, D. J., E. Greenbush	Rensselaer	4
Pohl, E. L., Watertown	Jefferson	2
Preston & Mingus, Andover	Allegany	1
Raymer, Fred C., Sodus	Wayne	2
Rindge, E. C., Cortland	Cortland	1
Ritter, Sidney A., Geneva	Ontario	1
Rollins, Wm., Greenwood	Steuben	2
Rowe, L. F., Otego	Otsego	1
Rumsey, Darwin, Newfield	Tompkins	8
Russell, H. A., Bombay	Franklin	1
Rymph, Sheldon I., LaGrangeville	Dut.	1
Sakin, E., Auburn	Cayuga	10
Sanford, S., & Son, Amsterdam	Mtg.	1
Sawyer, L. N., Big Flats	Chemung	1
Schantz, A. E., Carthage	Lewis	2
Schoonmaker, Selah, Gardiner	Ulster	1
Scranton, Homer A., Fernwood	Oswego	1
Sisson, C. L., Almond	Allegany	6
Smith, F. N., Kanona	Steuben	1
Sutphen, G. A., Shortsville	Ontario	52
Swain, W. E., Swain	Allegany	1
Swan, T. O. & A. B., Jasper	Steuben	14
Taylor, Clayton C., Lawton Sta	Erie	4
Tenney, W. J., Hamlin	Monroe	2
Tucker Bros., Scio	Allegany	5
Tucker, Fred N., Scio	Allegany	4
Turner, G. Archie, Horseheads	Chm.	1
Vanderveer Bros., Fultonville	Mtg.	1
Van Wickle, C. H., Geneva	Ontario	1
Virkler, C. F., Lowville	Lewis	3
Virkler, C. F. & J. F., Lowville	Lewis	3
Virkler, Sidney, Croghan	Lewis	2
Virkler, Wm. F., Castorland	Lewis	3
Walker, D. D., Chili Sta	Monroe	13
Walldorff, James, Alfred	Allegany	1
Warren, G. F., Ithaca	Tompkins	1
Wells, Horace J., 99 Sound Ave., Riverhead	Suffolk	2
Wendt, W. F., Lockport	Niagara	..
Wheeler, Henry, Kanona	Steuben	1
Wightman, B. L., W. Eaton	Madison	2
Williams, Aug. H., La Salle	Niagara	†2
Wright, B. F., Ransomville	Niagara	1
Wyeth, Madison J., Lowville	Lewis	1

AMERICAN SADDLE

American Saddle Horse Breeders' Association

Eldridge, Roswell, Great Neck	Nassau	14
Ramsdell, J. A. P., Newburg	Orange	9
Wilder, V. A., Warwick	Orange	2

SHIRE

The American Shire Horse Association,
Chas. Burgess, Sec'y.,
Wenona, Ill.

Hengerer, R. W., Hamburg	Erie	1
Hopkins, Fred, Wallace	Steuben	6
Jeffrey, Geo. C., Albion	Orleans	1
Kerr, A. L., Brockport	Monroe	4
Pendergast, S. W., Phoenix	Oswego	1
Swain, W. E., Swain	Allegany	7

SUFFOLK

American Suffolk Horse Association

Peer, F. S., Ithaca	Tompkins	11

THOROUGHBRED

The Jockey Club,
W. H. Rowe, Registrar,
6–8 *East 46th St., New York City.*

Been, A. F., R. D. 1, Glens Falls	Warren	1
Campbell, John D., R. D. 3, Schenectady	Schenectady	2
Clark, F. Ambrose, Cooperstown,	Otsego	30
Cochran, Gifford A., Mt. Kisco	Wes.	2
Cole, Hiram L., Greenwood	Steuben	3
Collins, John T., Camden	Oneida	1
Cowdin, Elliot C., Mt. Kisco	Wes.	17
Crawford, W. H., Salamanca	Cat.	4
Ellis, Ralph, Jericho	Nassau	1
Gordon, John H., Albany	Albany	2
Knapp, B. R. & O. A., Cortland	Cortland	2
Mackay, Clarence H., Roslyn	Nassau	2
Muldoon, William, Purchase	Wes.	8
Richmond, G. A., Springville	Erie	1
Ryan, Matthew M., So. Fallsburg	Sul.	1
Sanford, S. & Sons, Amsterdam	Mtg.	87
Stonebridge, George, Cedarhurst	Nas.	3
Terpenny, H. W., Kirkville	Onondaga	1
Ware, Dell, R. D. 3, Hannibal	Oswego	4
Willets, Samuel, Roslyn	Nassau	..

ASSES

American Breeders' Association of Jacks and Jennets,
J. W. Jones, Sec'y.,
Columbus, Tenn.

Averill, C. S., Syracuse	Onondaga	1
Lansing, Wm. F., Little Falls	Herkimer	1
Pendergast, S. C., Phoenix	Onondaga	1

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† Including pure-bred, not registered. * Part ownership.

PONIES

EXMOOR

Dawley, F. E., Fayetteville...Onondaga	3

HACKNEY

Converse, J. F., & Co., Woodville..Jef.	..
Delano, F. S., Ensenore........Cayuga	4
Knapp, B. R. & O. A., Cortland...Cor.	2
Weaver, Mrs. Alta M., Cortland....Cor.	4

SHETLAND

American Shetland Pony Club,
J. M. Wade, Sec'y-Treas.,
LaFayette, Ind.

Allen, Mrs. H. L., Alden..........Erie	20
Averill, C. S., Syracuse......Onondaga	1
Beeman, Geo. M., Lyons........Wayne	5
Bow, Mary R., Perry.........Wyoming	1
Conkling Farms, Rensselaerville...Alb.	8
Converse, J. F., & Co., Woodville...Jef.	..
Cooper, Joseph, & Son, Perry.Wyoming	2
Cornell, Chas. Ezra, Ithaca..Tompkins	†6
Delano, F. S., Ensenore.......Cayuga	5
Dodge, B. J., Verona...........Oneida	1
Edsall, J. B., Pine City.......Chemung	25
Griffin, J. H., Moira..........Franklin	9
Hawley, Mrs. E. F., Pittsford...Monroe	100
Hayden, Wm., & Son, McDonough..Chn.	3
Horton, E. E., Binghamton....Broome	20
Johnson, E. R. & G. F., Chaumont..Jef.	4
Knapp, B. R. & O. A., Cortland...Cor.	14
Letchworth & Delano, Ensenore...Cay.	6
Millard & Keenan, Oneonta.....Otsego	26
Schriver, Andrew, Chester......Orange	1
Shaw, J. R., DeLancey......Delaware	12
Sisson, Geo. W., Jr., Potsdam....St. L.	10
Starrett, Howard S., 171 Clermont Ave., Brooklyn .... Kings	8
Tucker, L. G., Scio...........Allegany	4
Turner, G. Archer, Horseheads....Chn.	12
Weaver, Mrs. Alta M., Cortland...Cor.	2
Williams, Nathan, Wellsville..Allegany	2

WELSH

The Welsh Pony and Cob Society of America,
George E. Brown, Sec'y.,
Aurora, Ill.

Katonah Wood Farm, Katonah...Wes.	4

CATTLE

ABERDEEN-ANGUS

American Aberdeen-Angus Breeders' Association,
Chas. Gray, Sec'y.,
817 *Exchange Ave., Chicago, Ill.*

Bonn, G. W., Springwater...Livingston	1
Cottrell, Jay C., Hoosick Falls....Ren.	10
Eckhardt, Clarence W., 21 Liberty St., New York................New York	11
Hall, Miller, Alpine..........Schuyler	7
Hamil, Daniel H., Walker......Monroe	16
Jackson, Austin, Mineral Spgs.Schoharie	15
Kerr, T. J., Collins...............Erie	1
Morse, James S., Levanna.....Cayuga	6
Sisson, C. L., Almond.........Allegany	8
Smith, H. C., Kent............Orleans	10
Wright, Chas., Plattsburg......Clinton	5

AYRSHIRE

Ayrshire Breeders' Association,
C. M. Winslow, Sec'y.,
Brandon, Vt.

Abbey, C. J., & Son, Cherry Creek..Cha.	25
Alfred University, Alfred.....Allegany	2
Allen, W. J., Philadelphia....Jefferson	†6
Atwood & Sons, L. E., Chazy...Clinton	20
Axtell, Henry, Savona.........Steuben	1
Babbitt, M. P., Belmont......Allegany	1
Babcock, F. M., Gouverneur....St. L.	65
Baker, A. M., Machias.....Cattaraugus	2
Baker, John H., E. Aurora.......Erie	22
Baker & Bro., J. O., R. D. 1, Andover, Steuben	3
Bancroft, Earl, Edwards........St. L.	1
Barnes, Harold S., Canton......St. L.	2
Barnes, Vernon A., Norwood....St. L.	6
Barney, Kent, Milford..........Otsego	22
Bartholomew, H. A., Whitehall...Was.	15
Beebe & Son, E. P., Holley.....Orleans	3
Beeman, Geo. M., Lyons.......Wayne	4
Bell, G. H., Est., Rome........Oneida	16
Bell, Mrs. Ida A., Rome.......Oneida	14
Bensley, Mark F., Morgan Bldg., Buffalo .... Erie	18
Bentley, Ellis W., Windham....Greene	12
Bilby, Emerson, Deposit.......Broome	25
Bilby, W. A., Rome, R. D. 1....Oneida	†8
Boice C. B., Newfield........Tompkins	4
Bonner, Roscoe C., Orwell......Oswego	12
Borden's Condensed Milk Co., 108 Hudson St., New York........New York	6
Bowen, S. E., Union, R. D. 2...Broome	8
Boyd, F. H., Florida...........Orange	2
Brooks, Frank, Grahamsville..Sullivan	3
Brown, John L., Chazy........Clinton	5
Brownell Harry E., Schaghticoke..Was.	5
Brusie, O. W., Millerton......Dutchess	15
Bull, B. W., Stony Ford........Orange	1
Burdick, Geo. W., Friendship.Allegany	37
Burdick, Merton, Wellsville, R. D. 4, Allegany	25
Burdick, Thos. J., & Sons, Alfred..Alg.	28
Burger, B. E., Greenwood.....Steuben	10
Burger, Hiram, Greenwood....Steuben	3
Burr, Mary C., Central Square..Oswego	3
Burrows, E. L., Mexico, R. D. 3.Oswego	4
Buttolph, J. A., Potsdam..St. Lawrence	6
Button, E. L., Melrose......Rensselaer	20
Carleton, E. A., Mt. Vision.....Otsego	†20
Carpenter, C. A., Ashville..Chautauqua	11
Carpenter, H. M., Ashville.Chautauqua	8
Carrier, Jesse I., Fulton.......Oswego	2
Champlin, L. A., Portville..Cattaraugus	6
Chapel, Sherman, Kennedy.Chautauqua	1
Cheesman, C. C., Ellenburg Depot.Cli.	1
Clark, N. E., Potsdam....St. Lawrence	35
Cole, E. Y., Springville...........Erie	10
Cole, T. D., Cuba............Allegany	3
Collins, Leroy J., Lisbon..St. Lawrence	1
Conkling Farm, Rensselaerville..Albany	8
Converse, J. F., & Co., Woodville..Jef.	100
Cookingham, F. H., Cherry Creek..Cha.	80
Cornell University, Ithaca....Tompkins	8
Coso, Frank D., Fort Plain.Montgomery	10
Cotton, Geo. I., Friendship...Allegany	19
Craig, John, Delhi...........Delaware	4
Crawley, Thomas J., Potsdam....St. L.	41
Cummings, Chas. D., Putnam....Wash.	3
Cuthbert, W. L., Hammond.....St. L.	6
Davis, Daniel H., Pulaski......Oswego	4
Davison, Milton W., Canisteo..Steuben	28
Dempsey, James, Rexville......Steuben	6
Dempsey, T. M., Rexville......Steuben	4
Doan, Judson H., Gouverneur....St. L.	14
Dolph, Earle L., Cuba........Allegany	4
Dorn, Elmer J., Johnstown.....Fulton	12
Dunham, James, Rexville......Steuben	1

† Including pure-bred, not registered.

Edwards' Son, Alvin W., Rexville..Stu.	8
Edwards, Walter, Greenwood..Steuben	1
Eggleston, R. W., Wadhams.....Essex	1
Evans, Ellen E., New Berlin..Chenango	..
Everett, F. E., Potsdam..St. Lawrence	9
Fairbank, C. W., Little Genesee....Alg.	12
Faulkner, W. W., Bath........Steuben	3
Fee, Kenneth, & Letson, J. J., Mooers, Clinton	1
Fitzpatrick, B., & Sons, Peru..Clinton	7
Fleming, John C., Middletown..Orange	35
Forrester, A. W., Chippewa Bay..St. L.	1
Gage, Lewis N., South New Berlin, Chenango	5
Goodnough, C. S., Edwards......St. L.	1
Gramps, Harvey, Fort Plain.....Mtg.	†1
Gray, V. H., Canton.....St. Lawrence	28
Greene, Clark W., Friendship..Allegany	4
Grenolds, L. S., Rexville.......Steuben	1
Gurnsey, James H., & Co., Woodhull, Steuben	22
Gurnsey, L. C., Woodhull......Steuben	18
Hall, Lott, Gouverneur...St. Lawrence	26
Hamilton, Herbert, Richville.....St. L.	1
Hayford, H. C., Champlain....Clinton	1
Hedden, S. P., Cuba.........Allegany	2
Helmer, Lester G., Herkimer.Herkimer	15
Henry, Geo. W., Walden.......Orange	2
Herrick, C. E., Middlesex........Yates	1
Heseltine, F. L., & Sons, West Union, Steuben	12
Hill, J. Edwin, & Son, Gouverneur, St. Lawrence	18
Hillis, A. W., South Worcester..Otsego	9
Hitchcock, B. D., Munnsville..Jefferson	1
Hobbs, Elwin B., Ogdensburg....St. L.	1
Hopkins, W. W., Moravia, R. D..Cay.	1
Horton, H. A., Johnson........Orange	12
Howe Brothers, Canton..St. Lawrence	2
Huffstater, L., Sandy Creek....Oswego	32
Hughes, C. A., Smiths Basin...Wash.	1
Jamieson, George E., Canton....St. L.	1
Johnson, A. D., Marathon....Cortland	16
Jones, Ira W., Est., Alfred...Allegany	†20
Karr, M. J., & Son, Almond..Allegany	25
Karr, S. S., & Son, Almond...Allegany	63
Kendall, Irene S., Churchville..Monroe	†9
Kenyon, L. H., Friendship....Allegany	19
Kerr, A. E., Edwards....St. Lawrence	2
Kerr, Emery H., Fine....St. Lawrence	5
Kerr, U. Q., Edwards....St. Lawrence	3
Ketcham, Lansing, Johnsonville...Ren.	1
Lake Placid Co., Lake Placid Club.Esx.	1
Leach, J. S., & Son, Gouverneur...St. L.	33
Lee, D. F., Granville......Washington	1
Lee, David W., Middletown.....Orange	1
Leonard, Walter, Spring Mills.....Alg.	14
Leroi, Mrs. Emma E., Penn Yan..Yates	1
Lewis, C. W., & Sons, Alfred Sta..Alg.	40
Lewis, John M., Alfred Sta...Allegany	3
Litchard, A. L., & Son, Rushford..Alg.	29
Lockie, Colin J., Gouverneur....St. L.	†11
Lunn, John, Edmeston.........Otsego	7
McGraw, A. P., McGraw......Cortland	1
McKenzie, H. C., Walton....Delaware	28
Makeley, Fred., Almond......Allegany	2
Marshall, Charles M., Gouverneur.St. L.	24
Marshall, Edward H., Ithaca.Tompkins	6
Marshall, J. A., Gouverneur.....St. L.	30
Mayhew, C., Rensselaer Falls.. .St. L.	26
Mead, A. F., Gainesville......Wyoming	6
Mead, F. G., Wellsville.......Allegany	19
Mead, Harry W., Canisteo.....Steuben	4
Mead, Ray E., Andover.......Allegany	12
Merry, Wm., Scio ....Allegany	..
Miller, H. A., Morris..........Otsego	2
Miner, Ira E., Shavertown...Delaware	1
Monroe, Jesse R., Alfred Station..Alg.	4
Morell, W. A., Washingtonville.Orange	65
Morgan, Glenn W., Russell, R. D.St. L.	1
New York State School of Agriculture, Morrisville .... Madison	3
Nickerson Bros., Scio........Allegany	9
Nicol, Stanley H., Hammond....St. L.	2
Nicol, Stanley H., Hammond....St. L.	*1
Nicol, W. W., Hammond..St. Lawrence	2
Nicol, W. W., Hammond..St. Lawrence	*1
Noble, Cleland, Edwards..St. Lawrence	1
Noble, Frank, Edwards...St. Lawrence	4
Norton, W. H., & Son, Wellsville..Alg.	70
O'Dell, L. D., & Son, Chaffee.....Erie	26
Olin, Walter T., Perry.......Wyoming	15
Ormiston, James, Cuba.......Allegany	16
Packer, A. E. & M. H., Milford..Otsego	4
Peer, F. S., Ithaca..........Tompkins	3
Peet, E. Carlton, Mt. Vision....Otsego	2
Pike, George E., Gouverneur.....St. L.	59
Pingrey, Lee H., Springville......Erie	9
Pool, L. H., Theresa.........Jefferson	5
Porter, Fred. L., Crown Point...Essex	1
Power, Guy D., & Son, Massena..St. L.	20
Powers, Ed. L., Ashville..Chautauqua	1
Rice, W. N., Whitesville......Allegany	9
Ricker, Clarence, Belmont....Allegany	†32
Ricks, Raymond, and Shultis, Clarence R., Bearsville .... Ulster	1
Rifenbark, L. E., E. Masonville...Del.	11
Rigby, C. T., Spring Mills....Allegany	†4
Robertson, Wm., Friendship..Allegany	2
Robinson, Wright J., Edwards..St. L.	2
Rodger, Geo. L., Gouverneur....St. L.	31
Rogers, Archibald, Hyde Park....Dut.	9
Rogers, A. P., Sagaponack.....Suffolk	1
Rood, M. M., W. Bangor.....Franklin	†7
Rose, Chas. O., Hornell.......Steuben	1
Ross, E. P., Gowanda....Cattaraugus	15
Rowley, Wm. H., Gouverneur....St. L.	3
Ryan, Peter J., Brewster......Putnam	175
Ryder, Arthur B., Barnerville....Sco.	35
Ryder, Chas., & Son, Barnerville..Sco.	35
Scofield, Geo., Cherry Creek......Cha.	1
Scott, B. T., Potsdam....St. Lawrence	4
Sears & Howell, Blooming Grove..Ora.	3
Shaver, Ward F., Shavertown....Del.	1
Sheehan, M. W., Hudson Falls, R. D. Washington	4
Shelters, Grant, Kennedy..Chautauqua	3
Sherman, Frank L., Bath....Steuben	5
Sherman, Frank R., Schuylerville..Sar.	†14
Silliman, J. B., South Kortright...Del.	28
Small, Chas. E., Gouverneur.....St. L.	3
Smith, G. E., Castile........Wyoming	1
Smith, Herbert D., Gouverneur..St. L.	1
Smith, Levi, & Son, Herkimer....Her.	11
Southard, D. W., Gilboa....Schoharie	5
Southworth, Johnnie, N. Bangor...Fr.	1
Spencer, Don M., Canton..St. Lawrence	6
Spooner, A. F., Richville..St. Lawrence	70
State Department of Agriculture, Albany .... Albany	15
Stevens, F. E., Glens Falls....Warren	6
Stewart, J. Henry, Kanona....Steuben	16
Stewart, Wm. H., Olean...Chautauqua	27
Story, L. M., Freehold.........Greene	8
Stowe, John G., Massena, R. D. 1.St. L.	†2
Stowell, F. D., & E., Black Creek.Alg.	67
Stowell, W. C., Black Creek..Allegany	15
Strickland, John P., Cattaraugus..Cat.	†27
Stuart, J. B., Canton....St. Lawrence	1
Swan, T. O., & A. B., Jasper..Steuben	20
Swart, H. D., Margaretville..Delaware	5
Taylor, John A., Hammond.....St. L.	3
Terry, L. L., Riverhead........Suffolk	6
Terwilliger, C. E., Clintondale..Ulster	1
Thomas, James P., Cuba......Allegany	30
Timerman, Helen C., Orleans Four Corners ....Jefferson	1
Truscott, Edgar B., Delhi...Delaware	1
Tubbs, A. S., Maple View......Oswego	57
Tucker Brothers, Scio........Allegany	8
Tucker, Fred N., Scio.........Allegany	3

† Including pure-bred, not registered. * Part ownership.

Tucker, L. G., Scio	Allegany	6
Tucker, W. G., Wellsville, R. D.	Alg.	60
Turner, A. A., Deposit	Delaware	4
Turner, F. J., Deposit	Delaware	4
Tuttle, M. A., Hornell	Steuben	27
Updyke, F. J., Canisteo	Steuben	18
Utica State Hospital, Utica	Oneida	†10
Van Nakin, I. C., Deposit	Broome	†10
Van Patten, C., Union	Broome	2
Wade, Arthur C., Jamestown	Cha.	20
Waite, E. E., Schaghticoke	Was.	5
Ward, C. G., Delhi	Delaware	24
Weeks, E. A., Locke	Cayuga	9
Welch, M. G., & Son, Burke	Franklin	30
Wheaton, S. N., Little Valley	Cat.	15
Whipple, L. W., & Son, Malone	Fr.	29
Whitmore, H. E., Avon	Livingston	2
Whitney, W. B., Gouverneur	St. L.	1
Wildman, Fred, Whitesville	Allegany	17
Will, John, Fort Covington	Franklin	34
Williams, R. T., Barneveld	Oneida	12
Willis, Leo, Rexville, R. D. 1	Steuben	2
Wilson, R. R., Hammond	St. Lawrence	3
Wollaston, J. Main, Cherry Creek	Cha.	4
Woodward, G. R., Woodhull	Steuben	5
Wright, F. S., Worcester	Otsego	†10
Young, John Alvin, Glen Cove	Nassau	1
Yule, Ray A., Scriba, R. D. 3	Oswego	2
Zabriskie, Andrew C., Barrytown	Dut.	16

BROWN SWISS

Brown Swiss Cattle Breeders' Association,
Ira Inman, Sec'y.,
Beloit, Wis.

Borden's Condensed Milk Co., 108 Hudson St., New York	New York	3
Burrington, A., Castorland	Lewis	2
Cook, D. H., M. D., 523 Clinton Ave., Albany	Albany	25
Eddy, Fred E., Ithaca	Tompkins	1
Fostee, John C., Greenwich	Was.	21
Foxhollow Farm, Rhinebeck	Dutchess	28
Freemyer, Frank, Middleburg	Sco.	45
Hagaman, Emma A., 883 Madison Ave., Albany	Albany	8
Hale, Wm. B., Rochester	Monroe	6
Hathaway, B. L., Alpine	Schuyler	12
Herrington, C. M., Johnsonville	Ren.	4
Hill, Moses A., Greenwich	Wash.	6
Hillis, A. W., So. Worcester	Otsego	12
Hoyt, Chas. R., Skaneateles	Onondaga	3
Hunt, Isaac L., Adams	Jefferson	80
James, W. E., Ithaca	Tompkins	12
Kerr, A. L., Brockport	Monroe	1
Lawdon, W. N., Weedsport	Cayuga	1
Leonard, L. H., Owego	Tioga	47
Marshall, James S., Johnsonville	Ren.	20
Maxwell, Henry C. G., Coila	Wash.	1
Membert, H. L., Old Chatham	Col.	1
Nixon, Louis K., Berkshire	Tioga	12
Powell, Wilson M., Jr., Old Chatham,	Columbia	12
Robertson, W. D., Coila	Washington	11
Scribner, W. L., Schoharie	Schoharie	12
Surbeck, J. C., Syracuse	Onondaga	20
Sutphen, Charles E., Ithaca	Tompkins	15
Teeter, Arthur J., Ithaca, R. D. 5	Tom.	1
Teeter, Chas. A., Ithaca	Tompkins	5
Trowbridge, Wm. R., Adams Center	Jef.	13
Van Alstyne, Hugh, Old Chatham	Col.	..
Virkler, Sidney, Croghan	Lewis	10
Virkler, Wm. F., Castorland	Lewis	1
Willsey, Wm. N., Berne	Albany	2
Young, Robert J., Shushan	Was.	12

COLUMBIAN

Gregory, C. O., Mt. Vision	Otsego	40
Gregory, Frank L., Mt. Vision	Otsego	15

DEVON

American Devon Cattle Club,
L. P. Sisson, Sec'y-Treas.,
Newark, O.

Alden, A. M., Freehold	Greene	2
Barton, Wm. H., Central Bridge	Sco.	12
Bronson, A. F., Est., Vernon	Oneida	17
Hathaway, B. L., Alpine	Schuyler	5
Hillis, G. M. & R. A., So. Worcester,	Otsego	12
Lewis, F. S., Ashville	Chautauqua	8
Lockwood, C. H., Oswego	Oswego	8
Titus, E. L., Sidney Center	Delaware	7
Wakeman, Elbert, Millneck	Nassau	2
Zeh, Stephen L., Schoharie	Schoharie	6

DEXTER AND KERRY

Carnochan, G. M., New City	Rockland	25
Gould, Howard, Pt. Washington	Nassau	45
Reid, Whitelaw, Purchase	Westchester	13
Shriner, W., Hector	Schuyler	†3
Stevens, F. E., Glens Falls	Warren	6
Terpening, F. N., W. Oneonta	Otsego	9

DUTCH BELTED

Dutch Belted Cattle Association of America,
G. G. Gibbs, Sec'y-Treas.,
Marksboro, N. J.

Abel, Claude, Verbank	Dutchess	5
Allen, John P., Marathon	Cortland	..
Davison, Chas. Stewart, 60 Wall St., New York	New York	3
Dunham, Mrs. Norvilla, Plainville	Ono.	15
Fowler, Northrup, Amenia	Dutchess	26
Grinnell, Merritt, Fly Summit	Was.	1
Hathaway, Geo. W., Schuylerville	Sar.	6
Heaton, S. B., Monroe	Orange	9
Hillis, W. L. & K. G., So. Worcester,	Otsego	12
Ladew, Harvey S., Glen Cove	Nassau	9
Lamon, A., & Son, Central Bridge	Sco.	4
Leasure, Chas. P., Nichols	Tioga	1
Lockwood, C. H., Oswego	Oswego	6
McMillen, Alex., Grovenor Corners	Sco.	14
Meade, W. P., & Son, Jamestown	Cha.	4
Pelton, Floyd I., Monticello	Sullivan	7
Sheehan, M. W., Hudson Falls	Was.	1
Smith, Erskine S., Marathon	Cortland	19
Stevens, F. E., Glens Falls	Warren	26
Williams, Edson, Newark Valley	Tioga	17
Woolsey, John P., Hurley	Ulster	5

FRENCH-CANADIAN

American French-Canadian Cattle Breeders' Association,

C. E. Colburn, Sec'y.,
Milford, N. Y.

Butler, Walter J., Glens Falls	Warren	1
Colburn, C. E., Milford	Otsego	24
Daniels, F. A., Otego	Otsego	12
Field, Augustus B., Sterlington	Roc.	9
Fralick, Willard, Marathon	Cortland	15
Hillis, A. W., So. Worcester	Otsego	12
Jackson, Austin, Mineral Springs	Sco.	14
Mitchane, Bert, Albion	Orleans	2
Orvis, George E., Black River	Jefferson	6
Stevens, F. E., Glens Falls	Warren	18
Van Akin, Jacob, Deposit	Delaware	†12
Vreeland, Mrs. G. W., Newark Valley,	Tioga	†4

† Including pure-bred, not registered.

GALLOWAY

American Galloway Breeders' Association,
R. W. Brown, Sec'y-Treas.,
Chicago, Ill.

Frost, George A., Montour Falls...Scu.	5
Hall, Miller, Alpine..........Schuyler	7
Hillis, A. W., So. Worcester....Otsego	8
Jackson, Austin, Mineral Springs..Sco.	14
Williams, Edson, Newark Valley..Tioga	2

GUERNSEY

The American Guernsey Cattle Club,
Wm. H. Caldwell, Sec'y-Treas.,
Peterboro, N. H.

Alexander, Ray H., Union Springs.Cay.	4
Alexander, W. A., Union Springs..Cay.	30
Alfred University, Alfred....Allegany	7
Allen, S. B., M. D., Burdett...Schuyler	12
Allnat, S. C., Cherry Creek.Chautauqua	1
Amos, A. G., Delhi..........Delaware	3
Arthur, Chas. H., Peru........Clinton	13
Austin, G. Irving, Morton.....Monroe	3
Bacon, Glenn L., Groton.....Tompkins	1
Bailey, C., Burnt Hills.......Saratoga	1
Baker, A. C., Alfred Station..Allegany	7
Baker, Charles H., Peekskill......Wes.	8
Barber, M. J., Silver Springs..Wyoming	2
Barnes, A. D., Smithville Flats....Chn.	50
Barrett, G. W., Andover......Allegany	4
Bartholomew, A. S., Whitehall....Was.	†9
Bartholomew, H. A., Whitehall..Was.	40
Batterman, H. L., Mill Neck...Nassau	6
Baxter, John D., Sharon Springs..Sco.	2
Beaver, Gilbert A., Yorktown Heights, Westchester	2
Beers, F. M., Catskill..........Greene	2
Beers, L. Adelbert, & Son, Big Hollow, Greene	1
Benedict, Fred G., Warsaw...Wyoming	1
Benedict, F. H., McLean.....Tompkins	13
Benham, F. G., Canandaigua...Ontario	125
Benham, O. W., Attica......Wyoming	1
Benjamin, Wm. M., Garrison...Putnam	†5
Berning, Frank C., Schenectady, R. D. 7 ....Schenectady	5
Billett, Gerald, & Sons, Stanley.Ontario	†8
Bird, Albert A., Cattaraugus......Cat.	17
Bishop, F. H., Stillwater.....Saratoga	1
Black, George A., Belfast.....Allegany	..
Blandy, I. C., Greenwich..Washington	50
Borden's Condensed Milk Co., 108 Hudson St., New York........New York	1
Borden, F. W., Schaghticoke.....Ren.	2
Borden, R. A., Schaghticoke.....Was.	21
Bossert, Louis, Bay Shore......Suffolk	43
Bowlby, H. B., Bath..........Steuben	3
Brewster, Rob't S., Mount Kisco...Wes.	9
Brown, Morton J., Kirkwood...Broome	12
Buck, Le Roy A., Groton....Tompkins	5
Buckley, Albert G., Valley Falls..Ren.	25
Buckley, F. B., Schaghticoke.....Ren.	75
Bull, George P., Berkshire.......Tioga	1
Bullock, W. A., Barneveld, R. D.Oneida	29
Burgess, C. D., Grapeville......Greene	4
Burgin, J. H., Fraser.........Delaware	5
Callahan, T. A., Cazenovia....Madison	1
Carpenter, Willard, Woodhull..Steuben	10
Cary, Geo. L., & Sons, Gansevoort.Sar.	7
Chamberlain, Dr. J. H., Belfast...Alg.	2
Chamberlain, Zaida, Belfast ..Allegany	1
Champlin, Earle, Groton.....Tompkins	..
Cheney, Nelson W., Eden.........Erie	3
Clark, Eugene H., Westmoreland..Oni.	6
Clark, Geo. A., Caneadea.....Allegany	3
Cleveland, Albert, Salem..Washington	2
Cleveland, William L., Salem....Was.	2
Cobb, William, Spring Mills..Allegany	..
Coggshall, David H., Groton..Tompkins	6
Collins, Cornelius, Taughannock Falls, Tompkins	1
Cone, R. H., Perry..........Wyoming	2
Conklin, Edward H., Schaghticoke.Was.	1
Conklin, Roland R., Rosemary Farm, Huntington .... Suffolk	20
Cook, D. C., Cazenovia.......Madison	1
Cooper, Joseph, & Son, Perry..Wyoming	9
Cornell University, Ithaca...Tompkins	10
Corwin, Frank J., Riverhead...Suffolk	12
Corwith, Henry N., Bridgehampton.Suf.	24
Coughran, G. W., Akron..........Erie	3
Cowdin, Winthrop, Mt. Kisco....Wes.	21
Cox, Joseph M., W. Henrietta..Monroe	4
Crocker, H. C., & Son, Sennett..Cayuga	30
Culver, Frank E., Ira.........Cayuga	6
Danks, J. Russell, Smithville Flats, Chenango	13
Dann, Frank W., Walton....Delaware	23
Davies, Julian T., Great River..Suffolk	7
Davis, Hiram C., Churchville...Monroe	4
Depew, G. M., & Son, Canandaigua.Ont.	2
Dewey, L. L., Lawrenceville......St. L.	4
De Witt, J. M., Potter Hollow..Albany	5
De Witt, M. A., Binghamton...Broome	40
Dixson, Clarence E., Unadilla...Otsego	†4
Dodd, Frank, Wayville.......Saratoga	7
Dodge, B. J., Verona...........Oneida	12
Douglass, B. F., Whitehall.Washington	5
Downs, E. R., Fulton, R. D. 9..Oswego	14
Drake, F. A., Ithaca.........Tompkins	4
Dunlop, W. R., Fayetteville..Onondaga	15
Dunn, Wm. J., Salem.....Washington	15
Dwight, P. L., DeRuyter......Madison	11
Easterbrooks, S. C., Almond..Allegany	5
Eddy, Robert D., Cattaraugus.....Cat.	3
Elwood, P. H., Fort Plain, R. D..Her.	1
Enos, E. F., Gloversville........Fulton	3
Evans, A. L., Worcester........Otsego	4
Evans, A. L., Worcester........Otsego	*1
Evans, David C., Angelica....Allegany	4
Evans, E. R., Ithaca........Tompkins	3
Every, R. L., Delhi..........Delaware	20
Fahnestock, Wm., Katonah.Westchester	8
Ferris, James H., Peekskill.Westchester	1
Fisk, D. E., Unadilla..........Otsego	†1
Fitts, Charlie, Moravia........Cayuga	1
Flint, A. H., Worcester........Otsego	5
Frost, C. L., Montour Falls...Schuyler	1
Garsden, Ralph R., Westmoreland..Oni.	1
Gelder, Jay, Kanona..........Steuben	4
Gick, Frank, Saratoga Springs.Saratoga	6
Gick, John, Saratoga Spgs., R. D. 2.Sar.	1
Gifford, M. E., Sherman...Chautauqua	8
Gildersleeve, F. P., Union Springs.Cay.	2
Gilmore, Wm. J., Hobart....Delaware	7
Goodrich, David M., Mt. Kisco....Wes.	8
Gordon, Fred H., Brockport...Monroe	2
Gratwick, W. H., Linwood..Livingston	23
Graves, B. W., Watertown...Jefferson	5
Gregory & Nayler, Mt. Vision...Otsego	8
Grout, M. C., Frewsburg...Chautauqua	1
Hagaman, Emma A., 883 Madison Ave., Albany .... Albany	1
Haight, A. S. & A. D., New Lebanon Center .... Columbia	3
Hall, John, Moravia..........Cayuga	9
Hall, Wm. B., Clinton Corners...Dut.	17
Hall, W. R., Walton........Delaware	6
Hammond, John Henry, Mt. Kisco, Westchester.	11
Hannay, J. B., Stillwater....Saratoga	1
Hanson, Geo., South Valley....Otsego	4
Hardie Bros., Roscoe........Sullivan	18
Harran, J. Mark, Hopkinton....St. L.	13
Harris, Hamilton, Gilbertsville..Otsego	1
Harris, L. L., Red Creek......Wayne	3
Harrison & Rowe, Mt. Sinai...Suffolk	1
Hart, Will J., York........Livingston	2
Hartt, Eliza, Trumansburg..Tompkins	1
Harts, Ed., E. Windsor........Broome	1

† Including pure-bred, not registered. * Part ownership.

Haviland, Willis J., Glens Falls..War.	7
Haynes, J. E., Seager..........Ulster	6
Herber, John, Delmar.........Albany	2
Herring, J. M., & Son, Moscow....Liv.	9
Hewes, E. B., Mayville....Chautauqua	10
Hillerman, C. D., Watkins...Schuyler	1
Hinds, C. J., Springfield Center...Ots.	5
Hiserodt, Wm., Red Creek.....Wayne	7
Hitchcock, N. J., Lebanon....Madison	7
Holbrook, Frank M., Ballston Lake, Saratoga	1
Hopkins, J. L., Owasco.......Cayuga	10
Hornburg, Chas., Ira..........Cayuga	49
Hotchkiss, Frank A., Millerton...Dut.	32
Hoyt, Colgate, Oyster Bay....Nassau	12
Hungerford, Nye, Ithaca....Tompkins	2
Hunter, J. H., Valley Falls......Ren.	28
Huston, W. H., Hector......Schuyler	1
Ives, Paul D., Valley Falls......Ren.	1
Johnson, Ambrose, Walton...Delaware	2
Johnson, Frank L., Cameron Mills, Steuben	5
Johnson, L. A., Walton.....Delaware	2
Johnson, S. P., & Son, Frankfort..Her.	4
Jones, J. E., McDonough....Chenango	20
Judson, Wm., Cato...........Cayuga	2
Katonah Wood Farm, Katonah...Wes.	40
Keator, I. I., Garrison........Putnam	†9
Keith, Geo. W., No. Brookfield...Mad.	2
Kiechle, M. B., Evans Mills..Jefferson	7
Kimball, Isaac, Ballston Spa.....Sar.	2
Kirkpatrick, J. H., Schuylerville..Sar.	6
Lagan, Charles T., Binghamton..Brm.	23
Lake Placid Co., Lake Placid Club, Essex	1
Lamont, Wm. C., Cobleskill..Schoharie	25
Lasher, Cary, Ballston Spa..Saratoga	12
Lawdon, W. N., Weedsport....Cayuga	1
Lawton, Edwin G., Lawton Sta...Erie	2
Lee, David W., Middletown....Orange	1
Leggett, C. E., Newark........Wayne	20
Lester, A., Owasco...........Cayuga	2
Lewis, Alfred G., Geneva.....Ontario	274
Lewis, Eldorado, Fayetteville....Ono.	1
Lockwood, C. H., Oswego......Oswego	5
Logan, Charles F., Binghamton...Brm.	25
Longyear, C. D., Jewett.......Greene	4
Lont, Stell, Red Creek........Wayne	1
Lookup, C. H., Marion........Wayne	1
McArthur, John W., Bloomville...Del.	1
McCaughan, Thos., Perry....Wyoming	1
McFee, Frank, Oneonta........Otsego	7
Machmer, Geo., Eden...........Erie	1
Mackay, Clarence H., Roslyn..Nassau	23
Mackey, Austin C., Medina....Albany	1
McLennan, John, Fayetteville....Ono.	1
McQueen, J. P., Salem....Washington	13
Macy, V. Everit, Ossining..Westchester	135
Major, J. K., Wading River....Suffolk	2
Malcolm, J. B., Marion........Wayne	9
Mallory, Robert B., Hamden..Delaware	8
Mangeot, Chas. J., Fulton....Oswego	45
Marshall, J. T., Lisbon.. St. Lawrence	3
Matteson, Henry C., Attica..Wyoming	2
Mead, Demas, Halcott Center..Greene	5
Metzger, Leo A., Groton....Tompkins	1
Mihalko, Alex M., Hobart...Delaware	1
Millard & Keenan, Oneonta....Otsego	1
Millard, N. G., Newark Valley...Tioga	5
Miller, Chas. J., Newfane....Niagara	11
Miller, Niles K., Woodhull....Steuben	4
Mills, C. V., Fillmore........Allegany	10
Mills, Frank S., Garrattsville...Otsego	2
Mohegan Farm, Peekskill.........Wes.	8
Moore, Claude, Tivoli........Dutchess	5
Morey, E. A., Candor..........Tioga	3
Morris, Rufus C., Ballston Spa....Sar.	1
Morrow, Charles, Pavilion....Genesee	5
Morse, A. D., Jewett..........Greene	2
Morton, L. P., Rhinecliff.....Dutchess	2
Morton, W. J. & C. G., Springville, Erie	38
Myer, E. R., Claverack......Columbia	2
Myers, Geo. B., Garrattsville...Otsego	6
Nelson, Richard M., Kinderhook...Col.	..
Neville, Frank, Sharon Spa..Schoharie	1
Northrup, Don P., Delancey......Del.	11
Nutting, B. F., Woodville....Jefferson	10
Nutting, M. S., Woodville....Jefferson	2
Oathout, W. J., Port Dickinson..Brm.	8
Ogden, Alfred T., Kinderhook.....Col.	5
Olmstead, Olney H., Walton..Delaware	1
Osborn, Elisha, Wainscott.....Suffolk	1
Packer, A. E. & M. H., Milford..Otsego	16
Page, D. E., Perry..........Wyoming	2
Palmer, A. B., Gansevoort....Saratoga	1
Parent, George S., Ballston Spa...Sar.	2
Parent, J. I., Ballston Spa...Saratoga	5
Pattison, E. P., Mt. Morris......Liv.	10
Payne, Edgar S., Penn Yan.....Yates	4
Payne, Fred A., Penn Yan......Yates	12
Peasley, Wallace A., Huntersland..Alb.	1
Peck, B. W., Belmont........Allegany	21
Peck, Charles A., Hensonville...Greene	3
Peck, Corydon, Locke.........Cayuga	50
Pelton, J. H., Monticello.....Sullivan	4
Perry, S. A., Lockport........Niagara	3
Petteys, John S., Greenwich....Wash.	6
Philo, Ruth Mildred, Elmira..Chemung	30
Pickup, John S., Cherry Creek...Cha.	5
Post, Otto W., Ensenore......Cayuga	47
Powell, Milon D., Medway.....Greene	5
Ramsdell, J. A. P., Newburg...Orange	2
Remington, Ralph L., Greenwich..Was.	4
Reynolds, C. F., Cooperstown...Otsego	2
Rhodes, E. F., Moreland Sta......Scu.	2
Rhodes, Ona M., Etna.......Tompkins	1
Rich, Adelbert P., Auburn.....Cayuga	3
Richmond, Dr. Nelson G., Fredonia, Chautauqua	20
Robertson, Wm. B. C., Mohawk...Her.	..
Roe, Clay F., Cobleskill.....Schoharie	3
Rogers, Archibald, Hyde Park....Dut.	2
Rogers, Charles B., Clinton....Oneida	1
Rowland, E. R., King Ferry...Cayuga	13
Royce, Chas. H., Ithaca.....Tompkins	1
Russell, James E., Peekskill......Wes.	22
Russell, T. D., Delhi.........Delaware	1
Ryther, E. N., Franklinville......Cat.	1
Salisbury, E. V., Oxford....Chenango	7
Schaffer, F. W. & W. D., Lockport, R. D. 9..................Niagara	3
Schiff, Mortimer L., Oyster Bay..Nas.	9
Schriver, Andrew, Chester.....Orange	6
Scott, Royal R., Canandaigua..Ontario	1
Selleck, W. R., Huntington....Suffolk	10
Sharpsteen, Karl Y., Moscow.....Liv.	1
Sherman, F. J., Ballston Spa.....Sar.	3
Sherman, J. G., Greenwich......Was.	25
Sincebaugh, Frank, Ithaca...Tompkins	1
Sisson, C. L., Almond.......Allegany	31
Sisson, Milton B., Almond...Allegany	9
Skinner, Cortland A., Greenwich..Was.	7
Slayton, F. Howard, Port Byron, R. D. 39..................Cayuga	5
Slingerland, Amasa, Delmar...Albany	3
Slocum, Alex. D., Greenwich....Was.	8
Smead, C. D., Hector........Schuyler	4
Smith, Chester T., E. Northport..Suf.	1
Smith, E. J., Saratoga Springs, R. D. 2, Saratoga	1
Smith, Edwin M., Lysander......Ono.	8
Smith, Fleet K., E. Northport....Suf.	6
Smith, Frank L., Ballston Spa....Sar.	16
Smith, Frank M., Springfield Center, Otsego	10
Snyder, Francis E., Huntersland..Sco.	1
Southwick, E. S., Port Byron..Cayuga	9
State Department of Agriculture, Albany .... Albany	15
Stearns, G. H., Peru..........Clinton	1

† Including pure-bred, not registered.

Stone, W. H., Caledonia....Livingston	14
Sutherland, W. A., DeLancey.....Del.	6
Swarts, Scott W., Springwater....Liv.	7
Swinnerton, Guy F., Wynantskill..Ren.	7
Taber & Mignin, Castile.....Wyoming	30
Tarbell, Gage E., Smithville Flats, Chenango	75
Taylor, Clayton C., Lawton Sta..Erie	60
Taylor, Moses, Mt. Kisco........Wes.	38
Teeter, W. B., Moravia.......Cayuga	1
Thomas, G. C. & Bros., Waterloo..Sen.	3
Thomas, Melvin, Wayville....Saratoga	6
Thompson, Jesse, & Son, Lisbon..St. L.	35
Thorne, Matthew, New Baltimore..Grn.	2
Thurston, J. E., New Lisbon....Otsego	15
Toan, Chas. H., Perry.. ...Wyoming	15
Torge & Swartz, Salamanca......Cat.	8
Towne & Fuller, Castile.....Wyoming	1
Traver, Chas. N., Wyantskill.....Ren.	1
Tuller, Arthur P., Port Byron..Cayuga	4
Tully Farms, Tully.........Onondaga	6
Turner, Geo. R., Deposit.....Delaware	1
Turner, R. C., Deposit......Delaware	1
Turner, Wallace, Schuyler Falls...Cli.	4
Tuttle, M. A., Hornell........Steuben	17
Van Alstyne, Edward, Kinderhook..Col.	8
Van Atten, J. A., Jerusalem...Albany	10
Van DeBogart & Simmons, Bearsville, Ulster	6
Vanderveer Bros., Fultonville....Mtg.	5
Van Derveer, Geo., Amsterdam...Mtg.	12
VanderVeer, G. Henry, Amsterdam. Montgomery	8
Van Doren Bros., Lysander......Ono.	3
Van Gelder, G. B., Canandaigua..Ont.	6
Van Horne, C. S., Amsterdam, R. D., Montgomery	9
Vankirk, E. S., Newfield....Tompkins	8
Van Tassel, Lorenzo, Livingstonville, Schoharie	5
Van Wagenen, Jared, Jr., Lawyersville, Schoharie	12
Vincent, Edward F., Maine....Broome	4
Voorhees, D. E., Plainville......Ono.	7
Voorhees, Wm. H., Estate, Amsterdam, Montgomery	10
Vosburgh, M. H., Gloversville..Fulton	7
Vrooman, Jason, Sharon....Schoharie	4
Wagan, R. M., & Co., Mount Lebanon, Columbia	†2
Walker, Robert F., Rome, R. D. 2, Oneida	1
Walker, Mrs. Stephen, Williamsville, Erie	6
Walsworth, A. E., Rome.......Oneida	1
Ward, George H., Whitehall.....Was.	2
Ward, Hamilton, Waterloo.....Seneca	4
Warner, F. P., Canandaigua.....Ont.	2
Watkins, E. D., Lima......Livingston	9
Waugh, Joseph, Watkins.....Schuyler	9
Webster, Henry U., Auburn, R. D. 4, Cayuga	5
Weeks, Clair G., Surprise......Greene	8
Weir, E. D., Belfast........Allegany	1
Wellman, C. V., & Sons, Perry...Wyo.	1
Wheat, John H., & Son, Moravia..Cay.	†6
Whelden, D. B., Greenwich......Was.	..
White, Geo. M., Freehold......Greene	17
Whiting, Chauncey L., Oswego...Osw.	15
Whitney, Edward F., Oyster Bay..Nas.	5
Wilbur, Chas. E., Greenwich.....Was.	9
Wilbur, Frank, Stillwater.....Saratoga	1
Wilbur, O. B., Greenwich.......Was.	18
Willets, Isaac, Est., Belmont......Alg.	4
Williams, E. J., Ballston Spa.....Sar.	2
Wilson, Wilmer S., Ovid......Seneca	1
Winne, William, Worcester....Otsego	1
Winthrop, R. D., Westbury....Nassau	21
Wood, Walter A., Jr., Hoosick Falls, Rensselaer	3
Wooheaton, H. B., Valatie...Columbia	1
Wright, E. C., Scio..........Allegany	..
Wright, E. E., Belmont......Allegany	15
Wright, Wm. C., W. Exeter.....Otsego	1
Yople, E. P., Watkins.......Schuyler	5
Young, John R., Kirkville...Onondaga	3

HEREFORD

American Hereford Cattle Breeders' Association,

R. J. Kinzer, Sec'y.,

Kansas City, Mo.

Cottrell, Case, Hoosick Falls......Ren.	5
Lamon, A., & Son, Central Bridge..Sco.	5
Lewis, F. S., Ashville.....Chautauqua	11
Phillips, B. F., & Sons, E. Bloomfield, Ontario	8
Schermerhorn, W. W., Keeseville..Essex	†21
Selleck, W. R., Huntington.....Suffolk	82
Velasco & Co., 128 Water St., New York..................New York	10

HOLSTEIN-FRIESIAN

The Holstein-Friesian Association of America,

F. L. Houghton, Sec'y.,

Brattleboro, Vt.

Abbey, G. W., Hamilton......Madison	8
Abbey, M. D., Windsor.......Broome	12
Abbott, Elmer E., Baldwinsville..Ono.	17
Abbott, E. R., No. Cuba.....Allegany	3
Abbott, G. A., Cortland......Cortland	25
Abbott, W. A., Groton......Tompkins	5
Abbott, Warren J., Baldwinsville..Ono.	8
Abel, Claude; Verbank.......Dutchess	1
Abel, W. J., Moore's Mills...Dutchess	8
Abell, F. L., Fayetteville....Onondaga	8
Ackerly, G. W., Jr., Crystal Run..Ora.	5
Ackley, J. H., Conewango Valley..Cat.	22
Ackley, John W., Cambridge.....Was.	1
Adair, W. H., Lisbon....St. Lawrence	4
Adams & Everingham, Manlius...Ono.	1
Adams, Edward E., Whitehall....Was.	6
Adams, Elmer, Castle Creek...Broome	1
Adams, George A., No. Norwich..Chn.	10
Adams, H. H., Antwerp......Jefferson	1
Adams, John W., No. Chatham....Col.	2
Adams, Oscar P., Castle Creek...Brm.	6
Adams, W. C., Almond.......Allegany	†18
Agett, G. H., & Son, Franklinville, Cattaraugus	8
Agett, Henry G., & Son, Franklinville, Cattaraugus	†3
Ahrens, J. P., Deposit........Broome	72
Aiken, E. S., So. Cambridge......Was.	27
Aiken, Herbert E., Jamestown...Cha.	3
Aikin, Adolphus, Sanborn.....Niagara	1
Aitken, R. M., So. New Berlin....Chn.	1
Akin, Andrew G., Canton.......St. L.	32
Albe, Mrs. C. S., Hamilton....Madison	17
Albright Bros., Newfield.....Tompkins	5
Albro, Wells G., Lounsberry.....Tioga	5
Albro, Wm. H., Cuyler......Cortland	1
Aldrich, C. S., Parish.........Oswego	1
Aldrich, Jay C., So. Plymouth....Chn.	1
Aldrich, R. L., Canton...St. Lawrence	1
Alexander, Fred, Hudson Falls...Was.	4
Alfred University, Alfred.....Allegany	10
Allard, H. J., Sheds.........Madison	4
Alleman, L. A. W., Geneva, R. D. 5, Seneca	1
Allen Bros., Massena....St. Lawrence	5
Allen, A. N., Mannsville.....Jefferson	13
Allen, Charles C., Greene...Chenango	9
Allen, Charles E., Altmar.....Oswego	14
Allen, E. P., Hammond..St. Lawrence	4
Allen, F. R., Ithaca........Tompkins	15
Allen, G. W., Sangerfield......Oneida	36
Allen, H. L., Rushford.......Allegany	3
Allen, H. N., Pawling........Dutchess	2

† Including pure-bred, not registered.

Allen, I. S., Hubbardsville....Madison	30
Allen, Jas. N., Binghamton....Broome	2
Allen, John P., Marathon....Cortland	16
Allen, Dr. J. R., Orwell.......Oswego	6
Allen, M. H., Sprakers, R. D. 1..Mtg.	5
Allen, M. L., Niobe.......Chautauqua	7
Allen, William H., Franklinville...Cat.	30
Alvord, James W., Kirkville..Onondaga	4
Ames, Frank W., Morristown....St. L.	35
Amsden, Alva, Black Creek...Allegany	35
Amsden, Geo., & Sons, Black Creek.Alg.	32
Anderson, C. A., Pitcher....Chenango	4
Anderson, D. E., So. New Berlin..Chn.	14
Anderson, Fred, Whitesville...Allegany	14
Anderson, G. Frank, Bullville..Orange	6
Anderson, N. E., Falconer........Cha.	21
Andrews, B. B., DeWitt.....Onondaga	50
Andrews, C. D., Camillus, R. D. 7..Ono.	15
Andrews, Fred L., Otego.......Otsego	1
Ansley, A. C., Penn Yan.........Yates	2
Appley, E. D., Liberty.........Sullivan	9
Archer, Allen, Randolph...Cattaraugus	6
Archer, Wm. H., Lowville.......Lewis	31
Ardrey, George, Dundee.........Yates	1
Argotsinger, Burton, Gloversville, R. D. 2 .... Fulton	1
Arity, G. W., Bouckville.......Madison	7
Armsby, A. L., Petersburg..Rensselaer	1
Armsby, F. L., Salem.....Washington	4
Armsby, J. G., Petersburg..Rensselaer	1
Armsted, C. H., Hornell.......Steuben	19
Armstrong, C. J., & Sons, Milford, Otsego	3
Armstrong, DeLancey B., Watertown, Jefferson	..
Armstrong, Frank, Great Valley..Cat.	12
Armstrong, George A., Shushan...Was.	4
Armstrong, J. N., & Son, Portville, Cattaraugus	7
Armstrong, Roy D., W. Winfield, R. D. 3 ....Herkimer	4
Arnold, A. D., Pawling........Dutchess	1
Arnold, D. F., Burlington Flats...Ots.	5
Arnold, Eleazer, Harkness.....Clinton	2
Arnold, E. J., Moravia........Cayuga	10
Arnold, George W., Schenevus..Otsego	13
Arnold, Norman G., Moravia...Cayuga	13
Arthur, Eugene, Lowville.......Lewis	40
Atchison, C. A., Barton.........Tioga	1
Atherton, Charles, Black Creek...Alg.	3
Atherton, W. H., Belfast.....Allegany	2
Atkinson, John, Cassville.......Oneida	8
Augsbury, Wm. B., Watertown.....Jef.	9
Austin Bros., Salem.......Washington	3
Austin, Charles E., Buskirks Bridge, Washington	12
Austin, W. D., Port Jackson....St. L.	1
Austin, Wm. E., Potsdam.......St. L.	2
Averill, C. S., Syracuse......Onondaga	50
Avery, Alfred, Kings Ferry....Cayuga	†5
Avery, Millard F., No. Collins....Erie	†10
Avery, O. J., No. Collins.........Erie	2
Axtell, M. F., Deposit........Delaware	2
Axtell, Wesson H., Hambletville...Del.	2
Aylesworth, G. H., Sherburne....Chn.	2
Ayres, George, Bullville........Orange	3
Babcock, C. C., Hamilton.....Madison	10
Babcock, Seward H., Solsville....Mad.	5
Backman, Frank, Weedsport....Cayuga	24
Backus, Chester A., Heuvelton...St. L.	1
Backus, Robert I., Heuvelton....St. L.	5
Backus, R. V., Mexico.........Oswego	26
Backus, W. M., New Berlin......Chn.	19
Bacon, Joseph, Theresa......Jefferson	7
Badger, LeRoy, DePuyster......St. L.	7
Bailey, John C., Jr., Westerlo..Albany	2
Bailey, John H., Syracuse, R. D. 5, Onondaga	1
Bailey, Leslie, Bath...........Steuben	2
Bailey, Oscar, Brewster.......Putnam	20
Baird, George A., Winthrop.....St. L.	19
Baker, C. A., & Co., Nunda..Livingston	17
Baker, Dr. Eugene, Ithaca...Tompkins	13
Baker, Fred, Fulton, R. D. 1...Oswego	†5
Baker, Geo. L., E. Pharsalia......Chn.	4
Baker, H. B., Gouverneur.......St. L.	11
Baker, Homer F., Richfield Springs, Otsego	8
Baker, Lester, Rexville, R. D. 2...Stu.	5
Baker, W. L., Manlius......Onondaga	22
Baker, W. S., Tiashoke.....Rensselaer	1
Balch, Volney W., Mannsville......Jef.	3
Baldwin, A. P., Pitcher.....Chenango	5
Baldwin, A. S., Patterson.....Putnam	52
Baldwin, B. S., Lincklaen....Chenango	1
Baldwin, Dr. G. E., Ausable Forks.Esx.	10
Baldwin, J. V., & H. E., Patterson, Putnam	14
Baldwin, Sumner, Wellsville.......Alg.	1
Baldwin, W. N., Pawling....Dutchess	18
Bales, Lee, Cayuta..........Schuyler	3
Ball, W. H., Newark Valley.....Tioga	2
Ballard, Charles G., McLean.....Tom.	†12
Ballard, H. E., Stormville....Dutchess	1
Ballerstein, Otto, Angelica....Allegany	3
Bame, A. W., Castleton....Rensselaer	18
Banfield, G. F., Candor.........Tioga	1
Banks, C. L., New Berlin....Chenango	43
Barber, A. W., Halsey Valley....Tioga	8
Barber, C. J., Canton....St. Lawrence	15
Barber, Edward B., Oxford..Chenango	8
Barber, George G., Skaneateles....Ono.	4
Barber, Herbert, Plattsburg....Clinton	23
Barber, L. L., Lowville..........Lewis	10
Barber, Osman L., Canton.......St. L.	13
Barbour, Geo. W., Dexter.....Jefferson	4
Bard & Cheney, Franklinville.....Cat.	14
Barker, E. B., Crown Point.....Essex	5
Barker, Jesse, Whitesville.....Allegany	5
Barker, Josiah, Watervliet.....Albany	1
Barker, Wm. S., Salem....Washington	1
Barnard, J. F., Fabius......Onondaga	25
Barner, Foster, Cobleskill....Schoharie	2
Barnes, C. E., Oxford.......Chenango	14
Barnes, H. E., Utica...........Oneida	1
Barnes, I. C., New Paltz........Ulster	3
Barnes, Lansing, Pt. Peninsular...Jef.	2
Barney Bros., Andover, R. D......Alg.	8
Barney Bros., West Union.....Steuben	8
Barns, Amos A., Ithaca.....Tompkins	1
Barns, C. W., Clinton.........Oneida	5
Barr, J. Irving, Afton.......Chenango	11
Barrett, G. W., Wellsville....Allegany	10
Barstow, Byron, Earlville.....Madison	21
Bartholomew, Alanson D., Whitehall, Washington	11
Bartholomew, E. J., Oriskany Falls, Oneida	4
Bartlett, L. D., Holley........Orleans	8
Bartlett, L. M., Adams.......Jefferson	1
Bartlett, M. H., Poolville.....Madison	17
Bartlett, Wendell T., Norwood...St. L.	13
Barton, A., Oneida..........Madison	5
Barton, Edward D., Waterville..Oneida	7
Bartoo, Fred L., Winfield.....Herkimer	6
Basinger Bros., E. Springfield...Otsego	1
Bassler, Wellington E., Middleburg, Schoharie	†3
Bastian, E. J., Earlville......Madison	12
Batchelder, A. F., Schenectady....Scy.	18
Bates, George, Red Creek.......Wayne	4
Bates, J. E., 45 W. 4th St., New York, New York	8
Bauder, Frank W., Fort Plain....Mtg.	60
Baxter, L. B., Norfolk....St. Lawrence	3
Baxter, W. H., Gouverneur......St. L.	11
Beach, Allen C., Peruville....Tompkins	3
Beach, Edward, Unadilla ....Otsego	1
Beach, Geo., & Son, Seneca Falls..Sen.	..
Beacon, Henry, Carmel........Putnam	2
Beadle, J. H., Hartford....Washington	5

† Including pure-bred, not registered.

Beagle, J. J., Wellsville......Allegany	7
Beal, W. J., Bridgewater.......Oneida	10
Beaman, F. B., Richville..St. Lawrence	6
Beard, F. P., M. D., Cobleskill....Sco.	3
Beard, R. H., Cortland.......Cortland	53
Beardslee, J. D., New Berlin......Chn.	1
Beattie, Robert, Salem.....Washington	4
Beatty, John W., Pawling....Dutchess	16
Beatty, L. T., Heuvelton..St. Lawrence	9
Becker, C. J., Dayton.....Cattaraugus	23
Becker, John, Greenwich...Washington	2
Becker, Lester, Greenwich.Washington	2
Becker, L. C., Philadelphia...Jefferson	†4
Beckwith, Oscar D., Greene..Chenango	12
Bedell, Emott W., Clinton Corners, Dutchess	10
Bedell, Geo. D., Clinton Corners..Dut.	1
Beebe, E. L., Nelson.........Madison	11
Beebe, J. A., & Son, Waterville.Oneida	19
Beebe, W. R., Wellsville.....Allegany	8
Beebee, T. S., Holland Patent..Oneida	8
Beeby, F. D., Central Square...Oswego	8
Beecher & Parker, Granville.....Was.	62
Beehler, Henry, Solsville.....Madison	9
Beemer, E. J., Unionville......Orange	5
Beidler, George, Lancaster.......Erie	1
Bell, Charles, Herkimer......Herkimer	18
Bell, Clark, 39 Broadway, New York, New York	6
Bell, James G., Brier Hill......St. L.	4
Bell, J. L. W., So. Edmeston...Otsego	7
Bell, M. S., Waverly...........Tioga	*3
Bellows, C. W., Baldwinsville....Ono.	2
Benedict & Hotchkiss, Brisben...Chn.	1
Benedict, E. L., Lebanon.....Madison	8
Benedict, Frederick E., LaGrangeville, Dutchess	1
Benedict, Harry L., Minetto...Oswego	8
Benedict, Zar, Lebanon ......Madison	2
Benington, Edwin, Edmeston...Otsego	1
Benklin, L., Little Falls....Herkimer	25
Bennett, Bert, Hornell........Steuben	5
Bennett, Chas. O., Hilton.....Monroe	4
Bennett, D. C., W. Burlington..Otsego	19
Bennett, Fay, Hornell........Steuben	12
Bennett, J. F., Cazenovia....Madison	1
Bennett, J. H., Antwerp.....Jefferson	14
Bennett, Miles, Hornell.......Steuben	6
Bennett, P. R., Milford........Otsego	18
Bennett, U. M., Smithboro......Tioga	1
Bennett, W. E., W. Burlington..Otsego	1
Bensley, Mark F., Morgan Building, Buffalo ....Erie	15
Benson, C. F., Groton.......Tompkins	†1
Bentley, A. C., Berlin......Rensselaer	5
Bergen, W. D., Limerick.....Jefferson	8
Berger, Miles, Salamanca..Cattaraugus	13
Bernard, H., Schenevus........Otsego	36
Berning, Frank C., Schenectady, R. D. 7 ....Schenectady	35
Berning, H. L., Schenectady......Scy.	2
Berry, A. L., Estate, Hornell..Steuben	1
Berry, H. D., Ft. Covington..Franklin	9
Best, E. P., Kinderhook.....Columbia	3
Betsinger, Fred H., Canastota....Mad.	3
Betsinger, Hezekiah, Durhamville..Onl.	4
Bettinger, Garry S., Mannsville...Jef.	2
Bettinger, J. H., Mannsville......Jef.	11
Bettinger, R. L., & Son, Kirkville..Ono.	12
Betts, Frank S., Ballston Spa.....Sar.	6
Betts, Hunter L., Phoenix.....Oswego	3
Betts, M. D., Hamilton......Madison	15
Bevier, James H., Gardiner.....Ulster	10
Beyer, Philip A., Cortland.....Lewis	2
Bibbens, Edward J., Weedsport...Cay.	†15
Bickford, A. C., Lowville.......Lewis	50
Bigelow, C. M., Conewango Valley..Cat.	4
Bigelow, F. E., Whallonsburg...Essex	20
Bigelow, Otis M., Baldwinsville..Ono.	12
Biggs, C. P., Ithaca.........Tompkins	4
Biggs, F. C., Trumansburg..Tompkins	30

Bigsby Bros., Phoenix.........Oswego	6
Billings, Edwin D., Earlville..Madison	14
Billings, L., Friendship.......Allegany	5
Birch, Abner H., Pine Bush....Orange	1
Birch, Herbert W., Union.....Broome	20
Birch, Joshua, Wallkill.........Ulster	4
Birch, M. L., Wallkill..........Ulster	†3
Birdsall, Dr. Gilbert, N. Brookfield, Madison	4
Birdsall, Van D., Unadilla.....Otsego	6
Bishop, N. E., & Son, Munnsville..Mad.	2
Black, Elmer E., Scio........Allegany	15
Blackfan, H. S., M.D., Cambridge..Was.	8
Blackmer, E. E., E. Randolph....Cat.	20
Blair, Everett, Heuvelton.......St. L.	4
Blaisdell, A. H., Cherry Creek....Cha.	12
Blanch, Isaac N., Newburg, R. D. 3, Orange	†7
Blanchard, F. A., Cortland...Cortland	10
Blanchard, S. H., Mexico......Oswego	34
Blanding, N. V., Syracuse, R. D. 4, Onondaga	20
Blewer, Fred A., Owego........Tioga	60
Blewer, Geo. F., Newark Valley..Tioga	95
Bliss, Eli, Morrisville.........Madison	4
Bliton, Mrs. R. J., Delevan.......Cat.	†5
Blood, F. A., Potsdam...St. Lawrence	1
Bloss, Geo. N., Whitesville...Allegany	1
Blossom, Elmer, Cuba........Allegany	12
Blossom, Eugene A., Cuba....Allegany	4
Blount, G. R., Lacona.........Oswego	2
Blowers, D. D., Nelson.......Madison	20
Boardway, Joseph P., Lawton Station, Erie	3
Boardway, M. H., Lawton Station..Erie	1
Bocket, Jacob, Amenia.......Dutchess	2
Bodine, Eli H., Chemung....Chemung	18
Bogart, E. L., Spencer..........Tioga	1
Bohrer, Louis, Sherrill..........Oneida	1
Bolt & Huey, Watkins........Schuyler	21
Book, Charles F., Schenectady, R. D. 7 ....Schenectady	7
Booth, Frank B., Mumford....Monroe	2
Borden's Condensed Milk Co., 108 Hudson St., New York........New York	1
Boshart, Lewis H., Lowville.....Lewis	3
Bostwick, John M., DeLancey.....Del.	1
Bottcher, August, Big Flats..Chemung	1
Boucher, Andrew, Rexville....Steuben	2
Bouck, E. I., Frankfort......Herkimer	3
Boutwell, O. J., Cherry Creek.....Cha.	5
Bovie, George M., Hoosick.......Ren.	8
Bowen, Mrs. Ida, Holley......Orleans	†1
Bowlby, H. B., Bath.........Steuben	23
Bowles, R. M., N. Bangor.....Franklin	3
Boyce, John L., Locke........Cayuga	14
Boyd, A. D., Adams.........Jefferson	1
Boyson, B. T., Rome, R. D. 2...Oneida	4
Boyson, Fred J., Rome........Oneida	5
Brace, R. E., Kennedy.....Chautauqua	16
Brackett, Manly T., Fulton....Oswego	3
Bradford, J. Fred, Central Square, Oswego	4
Brainard, C. M., Stockwell.....Oneida	3
Brainard, L. E., & E. B. Clarke, Hubbardsville ....Madison	*1
Brainard, O. D., Hubbardsville...Mad.	15
Braith, J. V. D. H., Jerusalem..Albany	†15
Branche, Louis, Mexico.......Oswego	1
Brandes, Clarence L., Stanards...Alg.	2
Brandes, Edward H., Wellsville...Alg.	2
Branthover, John, Minaville......Mtg.	20
Brasted, D. L., Hornell.......Steuben	6
Brayman, Clancy C., Westerlo..Albany	11
Brazie, Emmet, Goulds......Delaware	1
Breads, Harlow, Westfield........Cha.	1
Breaky, John F., Rensselaer Falls, St. Lawrence	4
Breckenridge, Josiah, Pope Mills, St. Lawrence	2
Brennan, L. C., Newburg, R. D. 1..Ora.	2

† Including pure-bred, not registered. * Part ownership.

Brennan, Patrick, West...Cattaraugus	3
Brenon, L. F., Rome..........Oneida	3
Bresee, S. K., Syracuse......Onondaga	2
Bretsch, P. B., & Son, LaFargeville.Jef.	3
Bridge Bros., Canastota .....Madison	18
Bridge, Jesse, & Son, Solsville....Mad.	16
Bridge, Selden D., Oneida, R. D. 2, Madison	3
Bridge, William M., Hornell, R. D. 1, Steuben	8
Briggs, Allison, Sherburne...Chenango	4
Briggs, A. E., West......Cattaraugus	1
Briggs, Eugene T., Greenwich....Was.	4
Briggs, Fred W., Quaker Street...Scy.	1
Briggs, M. L., Earlville.......Madison	7
Briggs, Walter, Earlville .....Madison	21
Brill, Frank M., Canastota....Madison	10
Brink, Harry J., Berkshire......Tioga	1
Brink, James H., Newark Valley..Tioga	1
Brink, J. L., Marathon.......Cortland	1
Briscoe, F. C., Otego...........Otsego	1
Broad, John H., Morrisville...Madison	2
Broadhurst, Mrs. Nellie B., Marcellus, Onondaga	43
Broadwell, F. G., Waterport...Orleans	†3
Brock, Thomas, Spencer........Tioga	2
Brockway, A. L., Auburn, R. D. 3..Cay.	110
Brodt, Mrs. Clara S., Mayville...Cha.	1
Bromling, A. G., Morristown....St. L.	21
Bronner, Myron G., Little Falls..Her.	2
Bronson, Horace L., Cortland.....Cor.	165
Brookman, Carl, Cherry Creek....Cha.	1
Brookman, J. M., Fort Plain....Mtg.	3
Brophy, George B., Oneida....Madison	5
Brousseau, Hannah P., Schodack Landing ....Rensselaer	7
Brown Bros., Canton....St. Lawrence	25
Brown, Albert A., Georgetown Station, Madison	20
Brown, Alexander B., Shushan...Was.	2
Brown, Archer H., So. New Berlin, Chenango	1
Brown, A. W., W. Winfield......Her.	75
Brown, C. H., Berkshire........Tioga	1
Brown, C. H., Jordan......Onondaga	1
Brown, Chas. P., Canastota...Madison	20
Brown, D. S., McGraw.......Cortland	5
Brown, Earl D., Ilion, R. D. 2...Her.	1
Brown, Frank, Middletown, R. D. 2, Orange	8
Brown, Frank E., Freeville......Tom.	4
Brown, G. J., Ballston Spa..Saratoga	17
Brown, Geo. R., New Berlin......Chn.	4
Brown, G. W., Cherry Creek......Cha.	24
Brown, H. C., Forestville.........Cha.	4
Brown, H. J., Georgetown....Madison	†5
Brown, Jay S., W. Edmeston...Otsego	1
Brown, John A., Georgetown.....Mad.	28
Brown, John C., Estate, Erieville..Mad.	11
Brown, John K., Walden, R. D. 1..Ora.	†17
Brown, John L., Chazy........Clinton	2
Brown, L. H., Hammondsport.....Stu.	5
Brown, Oscar J., Baldwinsville...Ono.	8
Brown, P. F., Trumansburg......Tom.	1
Brown, Parley M., 291 Prospect St., Binghamton ....Broome	12
Brown, R. P., Jasper.........Steuben	14
Brown, Ralph R., So. Otselic.....Chn.	18
Brown, S. C., Mexico.........Oswego	11
Brown, Walter H., Salisbury Mills, Orange	10
Brown, Wm. H., Bridgewater..Oneida	19
Brown, W. J., Norwood........St. L.	7
Brown, W. S., Elbridge.....Onondaga	1
Browning, H. H., Plymouth......Chn.	2
Browning, S. N., Massena......St. L.	20
Brush, E. A., Wingdale......Dutchess	3
Brutsman, H. F., Troupsburg..Steuben	6
Bryant, Will, Groton........Tompkins	†2
Buck & Harris, Mexico........Oswego	1
Buck, Walter M., Warsaw....Wyoming	20
Bucklin, L. O., Little Falls.......Her.	20
Buell, Otto A., Sherburne....Chenango	9
Bulkeley, R. P., Afton.......Chenango	1
Bull, B. W., Stony Ford.......Orange	18
Bull, E., Jr., Stony Ford......Orange	25
Bull, Geo. M., Slaterville Springs..Tom.	11
Bull, Geo. P., Berkshire........Tioga	1
Bull, W. H., Washingtonville..Orange	12
Bull, Willard H., Monroe......Orange	3
Bullard, Daniel, Cambridge......Was.	6
Bullis, Frank M., Sherburne......Chn.	15
Bullock, Walter B., Sherburne....Chn.	15
Bulson, Claude M., Schenevus..Otsego	19
Bump, H. V., Cambridge..Washington	10
Burbank, J. R., Andover.....Allegany	1
Burchard, S. B., Hamilton....Madison	60
Burdick, Alvin D., Burlington Flats, Otsego	4
Burdick, D. S., Alfred.......Allegany	55
Burdick, Elno L., Alfred.....Allegany	2
Burdick, E. P., Lincklaen Center..Chn.	1
Burdick, Geo. A., Almond....Allegany	1
Burdick, Harley H., Mexico....Oswego	3
Burdick, J. L., & Son, Cuyler..Cortland	3
Burdick, Morris L., Randolph.....Cat.	6
Burdick, P. L., Otego..........Otsego	1
Burdick, Sherman G., Otto.......Cat.	33
Burdick, T. G., Alfred Station....Alg.	1
Burger, F. L., Athens.........Greene	5
Burger, Wm. H., Dwaarkill....Ulster	4
Burgess, Alfred W., Pawling..Dutchess	5
Burgess, F. D., Phoenix.......Oswego	1
Burgess, G. H., Cassville.......Oneida	†9
Burham, D. E., Philadelphia..Jefferson	1
Burke, John, Ilion..........Herkimer	50
Burkett, Frank C., Pulaski.....Oswego	26
Burlesen, W. J., Munnsville...Madison	4
Burlingame Bros., Cazenovia..Madison	40
Burlingame, D. E., Hamilton..Madison	7
Burnett, G. S., Rocklet........Orange	1
Burnham, F. L., Little York..Cortland	11
Burnside, E. D., Maryland......Otsego	3
Burr, Mary C., Central Square..Oswego	6
Burrell, D. H., & Co., Little Falls.Her.	115
Burrell, E. J., Little Falls...Herkimer	115
Burrell, Mrs. L. L., Little Falls..Her.	7
Burrows, Daniel E., Burnside..Orange	1
Burt, E. H., DeRuyter.......Madison	2
Burt, Z. H., Cold Brook.....Herkimer	1
Burton, Chas. W., Patterson..Putnam	2
Burton, Fred B., Morrisville..Madison	19
Bush, Samuel G., Monroe......Orange	12
Bushnell, P. K., Windsor......Broome	1
Butcher, J. & P., So. Dayton.....Cha.	1
Butler, Ralph, Cortland.......Cortland	14
Butten, Mrs. Bella, Walden....Orange	1
Butten, William M., Walden...Orange	1
Button, A. A., Jasper.........Steuben	8
Button, C. H., Cortland.....Cortland	2
Button, Chauncey M., Chittenango, Madison	2
Button, J. K., Franklinville......Cat.	7
Butts, Bert J., Sherburne...Chenango	8
Butts, Fred H., Prattsburg....Steuben	2
Butts, George F., Manlius...Onondaga	1
Butts, George W., Fulton......Oswego	3
Butts, H. A., E. Windham......Greene	5
Butts, J. W. & W. H., Stanfordville, Dutchess	5
Butzer, Eugene, Collins..........Erie	1
Buyea, E. J., Oneida.........Madison	4
Buyea, Irving, Canastota.....Madison	7
Byard & Lidell, Schuyler Lake..Otsego	23
Cady, Dr. E. E., Goshen......Orange	105
Cady, W. N., Malone........Franklin	1
Cahill, Wm., Montgomery......Orange	1
Caldwell, E. J. & G. J., Rexford...Sar.	9
Calkins, E. S., Avoca.........Steuben	4
Callerter, J. D., Madison.......Madison	4
Calvert, E. M., Georgetown....Madison	2
Camenga, C. W., W. Edmeston...Mad.	3

† Including pure-bred, not registered.

Cameron, Charles, Solsville....Madison	11
Campbell, Burr W., Peterboro..Madison	3
Campbell, Chas. E., Sherburne....Chn.	20
Campbell, Frank A., Cazenovia..Mad.	5
Campbell, Harry W., Canastota..Mad.	26
Campbell, J. Wendell, Peterboro..Mad.	9
Canthers, John B., Centerville Sta., Sullivan	2
Card, Clayton G., Upperville.....Chn.	4
Card, H. C., Clymer......Chautauqua	6
Carhart, Oscar J., Oxford...Chenango	2
Carleton, David A., Edmeston...Otsego	5
Carley, D. E., Manlius.......Onondaga	19
Carley, Ira D., Lisle..........Broome	20
Carlisle Farms, Watertown...Jefferson	3
Carnal, Clarence W., Lisbon....St. L.	5
Carnal, William, Lisbon..St. Lawrence	2
Carnerhorn, Myron W., Friendship..Alg.	†2
Carpenter & Carpenter, E. Randolph, Cattaraugus	6
Carpenter, Artie L., Freeville....Tom.	1
Carpenter, B. W., South Granby..Osw.	1
Carpenter, C. W., Staatsburg.....Dut.	1
Carpenter, E. C., Alpine......Schuyler	2
Carpenter, E. J., Whippleville......Fr.	2
Carpenter, Harry S., Verona...Oneida	2
Carpenter, Lewis E., Unionville...Ora.	43
Carpenter, Roswell, Turin.......Lewis	3
Carpenter, Thos. B., Unadilla...Otsego	†2
Carpenter, W. M., Tiashoke......Ren.	10
Carr, Ezra, Homer..........Cortland	†12
Carr, R. E. & E. J., Cooperstown..Ots.	4
Carr, W. A., Tully..........Onondaga	40
Carrier, E. L., Cortland......Cortland	3
Carrier, L. J., Phoenix.........Oswego	15
Carrier, W. H., Phoenix........Oswego	24
Carter, A. B., Carthage......Jefferson	15
Carter, Burr, Hornell.........Steuben	1
Carter, Frank G., Marathon..Cortland	7
Carter, Roy M., Friendship...Allegany	8
Carty, J. P., Homer..........Cortland	..
Case Bros., Cazenovia.........Madison	2
Case, A. K., Chittenango.....Madison	12
Case, Russell C., Guilderland...Albany	3
Case, W. C., Kennedy.....Chautauqua	12
Casey, William, Sherburne...Chenango	11
Cass, D. M., Friendship......Allegany	1
Casse, M. W., Philadelphia...Jefferson	1
Castor, E. I., Pierrepont Manor...Jef.	1
Caswell, Guy C., Randolph........Cat.	3
Catlin, E. N., Tioga Center......Tioga	1
Cauthers, J. B., Centerville...Sullivan	1
Cavert Brothers, Hagaman.......Mtg.	11
Chaffee, Edward J., Amenia Union, Dutchess	20
Chaffee, John, Loomis.........Sullivan	27
Chamberlain, Edwin D., Chester...Ora.	†1
Chamberlain, Roy, Caneadea.......Alg.	2
Chamberlin, Edw. A., West Kill...Grn.	1
Chamberlin, F. G., Afton....Chenango	5
Chambers, C. J., Winthrop......St. L.	5
Chambers, J. A., Hamden....Delaware	10
Chambers, Mrs. Lou, Heuvelton..St. L.	7
Chambers, Peter, Walton.....Delaware	9
Champlin, F. S., Alfred Station...Alg.	21
Chapin, R. E., & Son, Batavia...Gen.	74
Chapin, S. H., Unadilla........Otsego	15
Chapman, C. L., Cassville......Oneida	1
Chapman, Jay W., Groton...Tompkins	9
Chapman, W. A., Mannsville..Jefferson	6
Charles, John T., W. Winfield.....Her.	4
Chase, A. C., Syracuse......Onondaga	20
Chase, C. E., Edmeston.........Otsego	8
Chase, C. H., Burlington Flats..Otsego	41
Chase, L. B., Whitesville.....Allegany	7
Chase, M. S., Rexville........Steuben	2
Chasmer, Jerome L., Canastota...Mad.	4
Chatfield, C. D., Freeville...Tompkins	6
Chatfield, Ralph, Freeville...Tompkins	2
Chautauqua County Farm, Dewittville, Chautauqua	7
Chavoustie, C. A., Three Mile Bay, Jefferson	48
Cheeseman, C. B., Theresa....Jefferson	9
Cheesman, M. D., Canisteo....Steuben	10
Chenango County Farm, Preston..Chn.	8
Cheney & Bard, Franklinville.....Cat.	†16
Cheney, W. W., Manlius....Onondaga	12
Chesbro, Geo. F., Pennellville..Oswego	29
Chesbro, W. R., Phoenix.......Oswego	6
Chesebro, Martin, Phoenix.....Oswego	16
Chickering, T. D., Copenhagen..Lewis	6
Choate, Jerome F., Clarence......Erie	10
Christ, Martin, Munnsville....Madison	11
Christ, M. C., Whitesboro......Oneida	3
Christ, Wilhelm, Stockbridge..Madison	8
Christman, E. O., St. Johnsville..Mtg.	5
Churchill, C. D., & Son, Akron...Erie	3
Clancy, W. J., Alfred Station.....Stu.	9
Clark & More, Adams........Jefferson	22
Clark, Arthur, Adams.........Jefferson	3
Clark, A. T., N. Stockholm......St. L.	10
Clark, B. P., & Son, Groton..Tompkins	32
Clark, C. A., New Woodstock..Madison	6
Clark, C. Emmet, New Berlin....Chn.	50
Clark, Chas. E., Camden......Oneida	11
Clark, Charles H., Peru.......Clinton	13
Clark, C. L., Preble.........Cortland	3
Clark, Chas. W., Adams.....Jefferson	1
Clark, Darwin, Peru..........Clinton	2
Clark, Datus, Peru...........Clinton	24
Clark, Dever, Canisteo........Steuben	14
Clark, D. G., Pennellville......Oswego	7
Clark, E. B., Hubbardsville...Madison	9
Clark, Edward L., Cuyler.....Cortland	11
Clark, Ernest F., 2346 So. Salina St., Syracuse .... Onondaga	2
Clark, Frank C., Ticonderoga...Essex	3
Clark, G., Blenheim.........Schoharie	1
Clark, Hugh, Pawling........Dutchess	19
Clark, H. D., Carthage......Jefferson	..
Clark, Henry L., Millerton...Dutchess	8
Clark, Henry V., Campbell Hall.Orange	6
Clark, Mrs. Mary E., Wadsworth.Liv.	6
Clark, S. H., Peru............Clinton	9
Clark, S. S., Eaton............Madison	1
Clark, W. D., Norwood...St. Lawrence	2
Clark, W. & J., Salem...........Was.	2
Clarke, C. S., Andover......Allegany	8
Clarke, E. D., Andover......Allegany	4
Clarke, E. E., Andover......Allegany	23
Clarke, Mrs. Floyd, Andover.....Alg.	6
Clarke, H. M., Andover......Allegany	†12
Clarke, R. A., Andover......Allegany	1
Clarke, S. W., Andover......Allegany	14
Clarke, W. D., Andover......Allegany	7
Clay, D. R., Vesper.........Onondaga	1
Cleland Brothers, Rensselaer Falls, St. Lawrence	1
Clelland, F. J., Camden.........Oneida	8
Clemens, Mrs. D. A., Westmoreland.Onl.	†1
Clement, H. D., Richland.....Oswego	1
Clements, D. H., Liberty.....Sullivan	1
Clineburg, E. E., Lindley.......Steuben	1
Clink, L. W., Little York....Cortland	7
Clute, J. V., So. Granby.......Oswego	7
Clymo, Geo., Avoca..........Steuben	3
Cobb, Arling, Spring Mills....Allegany	11
Cobb, Churchill, Spring Mills.Allegany	10
Cobb, Claire, Spring Mills....Allegany	20
Cobb, Henry Ives, Brewster...Putnam	20
Cobb, William, Spring Mills..Allegany	40
Coe, E. Emmons, Oneida.....Madison	21
Coe, R. E., & Son, Kirkville..Onondaga	48
Coe, W. Emmett, Peterboro...Madison	1
Cole, A. F., Eaton...........Madison	11
Cole, A. G., Carmel...........Putnam	10
Cole, C. L., Perrysburg...Cattaraugus	†6
Cole, Elgin J., Newport.....Herkimer	1
Cole, Geo. C., Solsville......Madison	100
Cole, John, Lysander........Onondaga	5
Cole, J. W., & Son, Amsterdam...Mtg.	3

† Including pure-bred, not registered.

Cole, Leander, Gilboa.......Schoharie	6
Cole, Marc W., Albion........Orleans	6
Coleman, Carlos J., Madison..Madison	3
Coleman, L. C., Tioga Center...Tioga	39
Coleman, W. D., Tioga Center..Tioga	1
Coley, H. W., Oneida.........Madison	7
Coley, J. W., New Woodstock..Madison	24
Collester, J. D., Madison.....Madison	4
Collier, Harvey, North Norwich..Chn.	2
Colligan, E. J., Watertown..Jefferson	17
Collin, Charles L., Fayetteville....Ono.	9
Collins, Amos H., Fulton......Oswego	8
Collins, Chas. D., Adams....Jefferson	11
Collins, C. R., Belmont......Allegany	3
Collins, Homer, Earlville.....Madison	17
Collins, M. S., Allentown.....Allegany	8
Collis & Mantle, Canastota....Madison	64
Colton, H. E., & Son, Morristown.St. L.	1
Colwell, Chas. E., Afton....Chenango	4
Colyer, W. H., Perryville.....Madison	6
Comfort, S. S., Elmira, R. D. 2..Chm.	16
Commission on New Prisons, Albany, Albany	1
Compton, N. M., Elmira.. ..Chemung	15
Comstock, J. H., Ithaca.....Tompkins	41
Comstock, W. G., Clinton.......Oneida	7
Conklin, Edward H., Schaghticoke.Was.	2
Conklin, James N., Tuscarora.....Liv.	1
Conkling Farm, Rensselaerville.Albany	5
Conkling, James, Ilion.......Herkimer	10
Conley, B. W., Andover.....Allegany	10
Conlon, May, Canisteo ....Steuben	2
Conner, A. J., Avoca..........Steuben	35
Conner's Sons, H., Avoca.....Steuben	35
Connolly, M. J., Cambridge......Was.	6
Conover, Isaac N., Little Britain..Ora.	5
Conrade, F. W., Andover.....Allegany	18
Conway, John J., Buskirk Bridge..Was.	1
Cook, Alson, & Sons, Denmark..Lewis	1
Cook, A. B., Andover........Allegany	2
Cook, A. L., Erieville........Madison	9
Cook, A. N., Unadilla.........Otsego	4
Cook, C. A., So. Granby.......Oswego	1
Cook, F. L., Cincinnatus.....Cortland	15
Cook, J. A., Sandy Creek......Oswego	1
Cook, O. M., & Son, Rodman......Jef.	18
Cooley, E. D., Rodman.......Jefferson	8
Coolidge & Holden, Ellenburg Ctr.Cli.	5
Coomber, Robert, Merrifield....Cayuga	4
Coon, D. B., DeRuyter........Madison	9
Coon, H. T., Homer.........Cortland	38
Coon, John C., Homer.......Cortland	12
Coonradt, L. J., Brier Hill......St. L.	1
Coons, Arthur, Barton..........Tioga	1
Cooper, L. A., Knoxville, Pa.....Tioga	†8
Cooper, Madison, Calcium....Jefferson	8
Corbett, M. J., Corbettsville....Broome	9
Corbin, Ralph, Bainbridge...Chenango	44
Corby, A. B., Binghamton, R. D. 1.Brm.	2
Corcoran, James W., Watertown...Jef.	21
Corey, C. F., Pennellville......Oswego	34
Corey, Ernest L., Phoenix.....Oswego	4
Cornell University, Ithaca...Tompkins	49
Cornell, Willis, Baldwinsville.....Ono.	5
Corning, L. H., Cortland......Cortland	2
Cornwell, Willet, Harford....Cortland	†4
Cornwall, W. W., Estate, So. Wales, Erie	5
Costello, Frank, Fayetteville.....Ono.	1
Coston, N. E., Greenwood.....Steuben	24
Coughlin, John, Cayuga.......Cayuga	6
Coulon, Mrs. May, Canisteo....Steuben	2
Courter, A. S., Otto......Cattaraugus	23
Courter, John S., Washingtonville.Ora.	6
Courtright, E. S., Lowman...Chemung	6
Couser, J. W., Thompson Ridge...Ora.	9
Covell, W. B., Pope Mills.......St. L.	1
Coveny, Robt., Walworth......Wayne	39
Coville, Kenneth G., Oxford..Chenango	1
Cowan, A., Kirkville.........Madison	1
Cowell, L. M., No. Spencer.....Tioga	1

Cowles, G. S., Ashville....Chautauqua	9
Cox, Joseph, Briscoe.........Sullivan	1
Coy, H. L., Greenwich....Washington	5
Cragg, D. E., Oriskany Falls....Oneida	4
Cramer, Almond, Cherry Valley.Otsego	5
Cramphin, W. G., Lebanon....Madison	1
Crampton, F. M., Homer.....Cortland	†5
Crandall, A. J., Sherman..Chautauqua	2
Crandall, B. D., DeRuyter....Madison	27
Crandall, M. A., & Son, Andover..Alg.	35
Crandall, S. G., & Sons, Andover..Alg.	22
Crandall, Wm. R., Andover...Allegany	34
Crane, A. L., Sanford........Broome	14
Crane, Susan L., Elmira, Box 245, Chemung	†3
Cranston, Earl B., Three Mile Bay..Jef.	4
Crapser, Bert S., Waddington...St. L.	2
Crary, Frank, Canton, R. D. 5...St. L.	3
Crary, W. R., Liberty........Sullivan	1
Crawford, J. B., Dundee.....Schuyler	2
Crawford, John T., Mt. Morris....Liv.	7
Crawford, T. J., Kennedy..Chautauqua	1
Crawford, Wm., Monroe.......Orange	7
Creedon, Dennis, Oriskany Falls..Oni.	14
Cregs, Barton I., Baldwinsville...Ono.	1
Crill, Geo., Holland Patent.....Oneida	15
Crittenden, C. L., Whitesville.Allegany	11
Crittenden, J. Arthur, Whitesville.Alg.	14
Crockford, Chas. H., Hannibal.Oswego	1
Cromie, J. W., Peru...........Clinton	7
Cromwell, F. B., Barnard......Monroe	2
Crooks, S. G., W. Bangor....Franklin	5
Cross, Charles O., & Sons, Johnstown, Fulton	16
Cross, Egbert T., Johnstown...Fulton	16
Cross, Geo. L., Philadelphia..Jefferson	6
Cross, Harrison, Pike.......Wyoming	1
Cross, Willis, Lincklaen Center...Chn.	8
Crossman, H. D., Weedsport...Cayuga	52
Crounse, E. P., Guilderland Center.Alb.	1
Crouse, Philip, Three Mile Bay....Jef.	1
Crowell, John W., Walden.....Orange	45
Crowell, W. H., Cato..........Cayuga	17
Crowningshield, Stanley, Ticonderoga, Essex	2
Crumb, A. J., Upperville....Chenango	3
Crumb, Floyd A., Oxford....Chenango	1
Crumb, Frank M., Westmoreland..Oni.	6
Cullen, Joseph, Montgomery....Orange	10
Cumisky, John, New Paltz......Ulster	5
Cummings, J., Remsen.........Oneida	1
Cummings, Jay J., Apulia...Onondaga	7
Curkendale, F. L., Berkshire.....Tioga	1
Curtis, Charles E., Hilton.....Monroe	14
Curtis, Geo. S., Rodman.....Jefferson	6
Curtis, Jay, Morrisville.......Madison	9
Curtis, John, Truxton ......Cortland	2
Curtis, L. A., Madison.......Madison	2
Dains, Frank S., Potsdam.St. Lawrence	1
Dale Bros., Penfield...........Monroe	2
Dalrymple, Isaac, Otselic ....Chenango	53
Damon, Edwin S., New Woodstock.Mad.	3
Damoth, N. A., Penn Yan......Yates	†4
Dandy, J. H., & Son, Canton...St. L.	†8
Danehy, W. H., Canastota....Madison	6
Danford, W. E., Sodus.........Wayne	15
Danforth, A. W., Philadelphia....Jef.	7
Daniels, A. A., Chaumont....Jefferson	12
Daniels, Elijah W., Webster Sta.Mad.	6
Daniels, J. M., Greenfield....Saratoga	2
Daniels, Landon K., Hammond..St. L.	1
Dann, Frank W., Walton....Delaware	3
Dann, J. R., Unadilla.........Otsego	2
Dannemann, Philip C., Fosterdale..Sul.	1
Dart., S. F., Jasper..........Steuben	6
Dates, J. D., Groton........Tompkins	10
Davidson, Frank E., Sherburne...Chn.	10
Davidson, John, No. Cuba....Allegany	3
Davies, D. S., Oriskany Falls...Oneida	17
Davies, Lincoln, Paris Station..Oneida	1
Davis & Jenkins, Cortland....Cortland	5

† Including pure-bred, not registered.

Davis Bros., Andover.........Allegany	5
Davis, C. F., Andover.......Allegany	18
Davis, Chas. N., W. Winfield.Herkimer	1
Davis, Chester D., Edmeston....Otsego	13
Davis, Edward, Fulton........Oswego	1
Davis, Ezra, Peterboro.......Madison	1
Davis, Fred D., Madison.....Madison	1
Davis, Frank W., Barneveld...Oneida	2
Davis, Geo. H., Frankfort...Herkimer	17
Davis, Geo. W., M. D., Peterboro.Mad.	8
Davis, Harry B. Chester......Orange	75
Davis, Hiram J., Salamanca......Cat.	15
Davis, Hugh J., Broadalbin....Fulton	6
Davis, H. L., Remsen..........Oneida	2
Davis, Mrs. T. M., Alfred....Allegany	3
Davis Myron H., Chili Station.Monroe	1
Davis Robert A., Ballston Spa...Sar.	16
Davis. Wm. H., Oneida.......Madison	2
Davis, W. H., Millbrook.....Dutchess	15
Davy, Wm. H., Little Falls..Herkimer	†5
Dawley, F. E., Fayetteville..Onondaga	20
Dawley, L. J., Forestville.Chautauqua	5
Day Calvin, New Berlin....Chenango	19
Day, Emerson, New Berlin...Chenango	22
Day, E. Stanton, Plattsburg...Clinton	1
Day, Frank H., Rexville......Steuben	2
Day, James H., Norwich....Chenango	†6
Day, Selden, Stockbridge.....Madison	1
Day, S. A., Peru.............Clinton	5
Day Walter J., Deansboro.....Oneida	11
Dean L. E., Ashville.....Chautauqua	†7
Dean, Patrick A., Andover....Allegany	2
Dearlove, J. L., Prattsburg...Steuben	1
Debrucque, John B., Canastota.Madison	6
Decker. B. H., Wallkill.........Ulster	32
Decker, C. W., Newark Valley...Tioga	6
Decker D. D., So. Dayton.Cattaraugus	5
Decker. David M., New Paltz...Ulster	14
Decker, D. R., Middletown.....Orange	1
Decker, F. W., Wallkill.........Ulster	20
Decker, W. H., Circleville.....Orange	1
Dedrick, Ralph B., Dryden..Tompkins	7
DeLamater, C. L., De Ruyter.Madison	†6
DeLano Fred S., Ticonderoga...Essex	8
DeLano, Milton, Canastota....Madison	2
DeLong, F. O., Lacona........Oswego	13
DeLong, Harry N., Rexford...Saratoga	2
Delong, R. M., Morristown......St. L.	6
DeMott, Arthur, Hartwick.....Otsego	10
Denink, W. J., Clymer....Chautauqua	1
Denison, Daniel, Manlius......Madison	2
Denison, F. T., Sinclairville......Cha.	..
Denison, H. W., Edmeston.....Otsego	32
Dennis, Andrew. & Son, Cameron..Stu.	5
Dennis, R. W., Jasper........Steuben	35
Denton F. A.. Wingdale......Dutchess	1
Denton, Theodore L., New Hampton, Orange	28
Depew, S. L., Auburn........Cayuga	5
Depew, W. H., Auburn.........Cayuga	31
Desmond, Jas., Waddington......St. L.	1
Deuel, D. M., Slaterville Spgs....Tom.	1
Deuel, E. D., Otego............Otsego	2
DeVany, John R., Ex., Ellenville..Uls.	2
DeVaul, Chauncey E., Chittenango Station .... Madison	1
Devoe, H. L., Accord..........Ulster	5
Devoe, Samuel L., Boonville....Lewis	1
Dewey, John M., Turin.........Lewis	36
DeWitt, C. B., Bradford......Steuben	2
DeWitt, C. N., Hurley..........Ulster	8
DeWitt, N. F., Odessa........Schuyler	1
Dezell, W. A., Lisbon....St. Lawrence	14
Diable, Robert, Munnsville...Madison	3
Dick, Geo., Oswego...........Oswego	2
Dickerson, Arlington S., Thompson Ridge .... Orange	11
Dickerson, G. Waldo, Montgomery.Ora.	20
Dickhaut, F. M., Redwood....Jefferson	3
Dickhaut, Geo. M., Theresa...Jefferson	17
Dickinson, B. W., LaFargeville...Jef.	4
Dickinson, W. S., Messengerville..Cor.	1
Dickirson, A. S., Thompson Ridge.Ora.	11
Dievendorf, A. H., Sprakers......Mtg.	6
Dievendorf, Earll, Sprakers ......Mtg.	7
Dievendorf, W. B., Sprakers.....Mtg.	8
Diez, Fred, Jr., Youngstown...Niagara	1
Diez, John A., Wilson........Niagara	13
Dilley, John A., New Berlin.Chenango	3
Dillin, J. R., Adams Center...Jefferson	1
Dillon, Wm., Florence.........Oneida	6
Disbrow, Myron, Esperance..Schoharie	3
Dixe, Nicholas, Cazenovia.....Madison	..
Dixon, Frank E., Vernon......Oneida	2
Doan, A. H., Belmont.......Allegany	6
Doan, Theo. W., & Conkling, 56 Hanford St., Middletown........Orange	12
Dodd, J. E., New Paltz.........Ulster	4
Dodge, H. B., Moscow......Livingston	1
Dolbeck, H. V., Ticonderoga.....Essex	6
Dollar, E. H., Heuvelton..St. Lawrence	150
Dolph, Eugene C., Cuba......Allegany	1
Donahue, Delbert G., Camillus...Ono.	3
Donald, B. J., Brier Hill..St. Lawrence	7
Donley, H. R., Dryden.......Tompkins	4
Donnan, A G., Linwood....Livingston	33
Donnelly, J. W., Phelps.......Ontario	3
Donovan, J. G., Potsdam.St. Lawrence	5
Doolittle, John, Edmeston......Otsego	3
Doran Bros., Wellsville......Allegany	2
Doran, Mrs. J. F., Brookview.....Ren.	26
Doremus, Geo. S., Merrifield...Cayuga	1
Doren, A. G., Ogdensburg, R. D. 2, St. Lawrence	15
Dority Bros., Hammond..St. Lawrence	25
Dorman, J. F., New Woodstock..Mad.	1
Dorn, Fred E., Brookton....Tompkins	1
Dorr, Adam, DePauville .....Jefferson	4
Dorr, David H., DePauville...Jefferson	2
Dotshome Farms, Fayetteville....Ono.	14
Doty, E. E., Geneseo.......Livingston	7
Douglas, Geo. W., Pulaski.....Oswego	4
Douglas, Henry, Crary Mills....St. L.	7
Douglass, W. W., Goshen......Orange	13
Dow, D. C., Jr., Cobleskill...Schoharie	8
Downey, Timothy, Oxford...Chenango	1
Downs, E. R., Fulton.........Oswego	5
Doyle & Rigney, Thompson Ridge..Ora.	8
Drake, Francis, Canisteo.....Steuben	1
Drake, M. F., Erin.........Chemung	1
Draper, A. L., Ballston Lake..Saratoga	20
Drennan, James D., Meridian..Cayuga	1
Dresser, H. S., Poolville......Madison	3
Dristle, Alden, Cobleskill....Schoharie	7
Droms, E. C., Schenectady, R. D. 7. Schenectady	2
Drummond, Robt. L. & Robt. W., 59 Genesee St., Auburn........Cayuga	7
Dubois, Elting, Pine Bush.....Orange	22
DuBois, Frank, Wallkill........Ulster	25
DuBois, Jesse, Walden ....Orange	35
DuBois, Perry, New Paltz......Ulster	8
DuBois, Philip H., New Paltz...Ulster	30
DuBois, Solomon, New Paltz...Ulster	50
Dudley, C. E., Meridian.......Cayuga	5
Dudley, Eugene, Cuba ......Allegany	8
Dudley, E. W., Cuba.........Allegany	8
Duncan, J. D., Arcade......Wyoming	1
Dunham Bros., Bainbridge..Chenango	60
Dunham, C. D., Hamilton....Madison	2
Dunn, A. C., Hastings........Oswego	1
Dunn, J. H., Verona Sta......Oneida	1
Dunning, M. E., Middletown, R. D. 2. Orange	7
Dunshee, Emmons, Youngs..Delaware	1
Dunton, Harvey V., Camden...Oneida	3
Dupee, L. J., Edmeston........Otsego	3
Durfee, W. C., Valley Mills...Madison	1
Dusenberre, Geo., Modena......Ulster	1
Dwight, W. H., So. Otselic...Chenango	2
Dwyer, Edward, Schaghticoke....Ren.	19
Dye, Ernest, So. Dayton..Cattaraugus	12
Dye, E. B., Antwerp........Jefferson	2

† Including pure-bred, not registered.

Dye, S. C., Bridgewater.......Oneida	1
Dyer, Thos. H., Wingdale....Dutchess	19
Dygert, Chas. P., So. Hammond..St. L.	23
Eames, Lewis, Fulton.........Oswego	1
Eason, S. B., Schuyler Lake...Otsego	9
Eastman Bros., Rodman.....Jefferson	9
Eastman, Howard S., Waterville..Oni.	7
Eaton, J. W., Johnson.........Orange	19
Eblom, A. L., E. Randolph.Cattaraugus	9
Ecker, E. W., Hartfield...Chautauqua	30
Ecker, J. Orville, Fayetteville....Ono.	1
Eckert, E. G., Orleans Four Cors...Jef.	4
Eckler, Arthur W., Ilion....Herkimer	3
Eddy, J. C., Williamson.......Wayne	12
Eddy, Thomas S., Malone....Franklin	3
Edgarton, Irving D., Poolville...Mad.	7
Edgarton, Lee, Fulton........Oswego	3
Edgerton, F. A., Ava..........Oneida	6
Edgett, Asa, Waterloo.........Seneca	†5
Edic, P. A., Oriskany Falls....Oneida	4
Edmistu, E. L., Lisle.........Broome	1
Edmonds, H. L., Rodman....Jefferson	4
Edwards, J. D., & Sons, E. Freetown, Cortland	6
Edwards, Timothy C., Oswego..Oswego	3
Egbertson, J. K., Campbell Hall..Ora.	1
Eggleson, Herbert E., Canton...St. L.	2
Eifert, H., New Paltz..........Ulster	2
Eiss, A. G., LaFargeville.....Jefferson	†4
Elder, L. J., Lysander......Onondaga	7
Elderkin, S. H., Fly Creek.....Otsego	1
Eldredge, C. A., Palmyra......Wayne	1
Eldredge, W. A., Lockport, R. D. 1, Niagara	3
Elliott, H. R., Wellsville.....Allegany	2
Ellis, Charles B., Stephentown...Ren.	10
Ellis, C. W., McGraw........Cortland	40
Ellis, J. H., Caledonia.....Livingston	30
Ellis, Spencer, Unadilla........Otsego	11
Ellis, U. G., Fort Edward..Washington	14
Ellithorp, Earnest B., Hudson Falls, Washington	1
Ells, Spencer, Unadilla........Otsego	11
Elmer, Herbert R., Williamstown..Osw.	1
Elmer, Otis, Williamstown.....Oswego	1
Elmore, Madison, Sheds .....Madison	17
Elmtree Farm, Charlotte......Monroe	31
Elston, John D., Westtown,...Orange	2
Emerson, Herbert S., Bath....Steuben	1
Emery, F. H., Hornell........Steuben	4
Emmons, N. H., Oneonta......Otsego	..
Engle, M. B., Friendship.....Allegany	1
English, Clarence D., Nelson..Madison	2
English, G. R., Whitney Point...Brm.	5
Enos, Harry, Penn Yan........Yates	1
Ensign, Geo. H., Erieville....Madison	32
Erlenbeck, C. L., E. Syracuse....Ono.	14
Ernest, W. G., Amsterdam..Montgomery	2
Ersley, L. W., Greenwood.....Steuben	7
Ervay, Geo. F., Alpine.......Schuyler	†7
Esch, Fred W., Verona........Oneida	3
Esch, Jacob M., Verona........Oneida	1
Eselin, H. F., Three Mile Bay....Jef.	5
Estes, John, Sloansville.....Schoharie	3
Etkin & Levine, Fallsburg ...Sullivan	6
Evans, Ellen E., New Berlin..Chenango	2
Evans, H. Alvord, Norwich..Chenango	2
Evans, H. H., Ransomville....Niagara	4
Evans, James, Norwood..St. Lawrence	1
Evans, J. A., & Son, Canastota..Mad.	5
Evans, R. Price, Cassville.....Oneida	15
Evans, W. M., Waterville......Oneida	3
Everett, F. E., Potsdam..St. Lawrence	10
Everman, Clement, Dansville.....Liv.	11
Evermann, Albert J., Dansville...Liv.	7
Evermann, C., Dansville....Livingston	5
Evermann, T. B., Dansville......Liv.	1
Everson, Geo. W., Fort Plain....Mtg.	18
Every Bros., Bloomville.....Delaware	20
Every, Geo. F., Alpine.......Schuyler	7
Excell, Solomon, E. Hamilton....Mad.	1
Failing, Aaron, St. Johnsville....Mtg.	12
Failing, David, St. Johnsville....Mtg.	11
Fairbank, Augustus, Churchville..Moe.	†15
Fairbank, A. R., DeWitt....Onondaga	20
Fairchild, Chas. D., Oriskany Falls, Oneida	3
Falkey, Luther E., Phelps....Ontario	10
Fallon, J. F., Constable......Franklin	4
Fancher, A. T., Salamanca.......Cat.	52
Farber, Wm. H., Poland....Herkimer	10
Farnham, C. H., Brocton..Chautauqua	†4
Farnsworth, A. A., Wadhams...Essex	†1
Farr, J. D., Watertown.....Jefferson	8
Farr, W. E., Elmira.........Chemung	4
Farrington, Frant, Pulaski ....Oswego	12
Farwell & Chandler, Hampton...Was.	22
Faulkner, E. E., New Kingston...Del.	12
Faulkner, Wm., Hornell, R. D. 2..Stu.	5
Faulkner, W. P., Earlville...Chenango	12
Favrey, Frank, Chaumont....Jefferson	6
Feeter, W. A., Little Falls...Herkimer	1
Fellows, Chauncey S., Baldwinsville, Onondaga	1
Fellows, F. A., Weedsport.....Cayuga	11
Fellows, Frank, W. Lebanon..Columbia	†4
Felt, Nick, Allegany......Cattaraugus	1
Fenton, George, Utica.........Oneida	1
Ferguson, Darius, Brewster...Putnam	1
Ferstler Bros., Kirkville.....Onondaga	2
Fesler, John T., Salamanca......Cat.	1
Fessenden, Edwin S., King Ferry..Cay.	4
Fetter, M. B., Walden.........Orange	2
Field, Albert L., Hartwick.....Otsego	2
Field, Mrs. Alice M., Waverly..Tioga	7
Field, Augustus B., Sterlington...Roc.	8
Field, A. Pierre, Brewster.....Putnam	4
Fieldson, Samuel J., Heuvelton..St. L.	12
Fifield, Aaron A., Potsdam......St. L.	3
Fillmore, F. B., Fayetteville..Onondaga	1
Filsinger, G. Fred, Fayetteville..Ono.	11
Findlay, Jas. & D. L., Salisbury Mills, Orange	22
Finnegan, Thomas, Madison...Madison	21
Firemen's Home, State of New York, Hudson .... Columbia	27
Firman, M. D., No. Norwich..Chenango	35
Fish, E. A., Henderson......Jefferson	1
Fish, H. A., New Haven......Oswego	11
Fisher, C. A., Spencer.........Tioga	26
Fisher, M. D., Spencer..........Tioga	7
Fisher, Robert B., Cambridge....Was.	1
Fisher, Warren D., Cambridge...Was.	1
Fisher, W. V., Burlington Flats...Ots.	8
Fisk, C. H., Syracuse.......Onondaga	22
Fitch, C. H., & Sons, Burlington Flats, Otsego	31
Fitch, H. Harold, W. Winfield....Her.	2
Fitch, W. H., Lowville.........Lewis	2
Fitzgerald, Maurice G., Cape Vincent, Jefferson	8
Fitzgerald, Rev. T., Middletown, R. D. 1, Orange	3
Fitzgerald, Wm. H., & Sons, Chester, Orange	6
Flack, B. G., Lisbon.....St. Lawrence	3
Flaherty, Sherman, Antwerp..Jefferson	1
Fleetham, George H., DePeyster..St. L.	27
Fleming, S. J., Walden........Orange	50
Fletcher, C. L., Dover Plains..Dutchess	1
Fleury, J. J., Walden.........Orange	4
Flint, Howard W., Worcester...Otsego	9
Flint, W. A., Adams Center..Jefferson	2
Fluckiger, Albert, Unadilla.....Otsego	..
Follett, Whitman A., No. Norwich, Chenango	44
Foote, Edw. O., Sherburne..Chenango	1
Foote, H. E., Guilford......Chenango	5
Foote, J., Sherburne ....Chenango	10
Foran, John, Merrifield.......Cayuga	4
Forbes, Grant A., Jamestown....Cha.	6
Ford, A. L., Solsville........Madison	2
Ford, W. L., Little Falls, R. D. 1..Her.	1
Forrence, Frederick M., Peru..Clinton	4
Forrester, H. J., Hammond......St. L.	31

† Including pure-bred, not registered.

Foster, Chas., Fulton ....Oswego	†3
Foster, D. H., Gowanda.........Erie	4
Foster, Edwin, Homer ......Cortland	3
Foster, Hiram D., Lawrenceville..St. L.	1
Foster, I. J., Cortland.......Cortland	30
Foster, Ivory R., Owego........Tioga	46
Foster, Warren E., Preble...Cortland	12
Fowler Brothers, Lowville......Lewis	27
Fowler, E. E. & P. S., Lowville..Lewis	21
Fowler, Merton M., So. Edmeston..Ots.	8
Fowler, R. A., Cherry Creek.....Cha.	9
Fowler, Wm. H., Alpine.....Schuyler	2
Fox, Leon J., Greene.......Chenango	1
Fox, Lester and Frank, Homer, R. D. 2, Cortland	3
France, Veeder, Cobleskill...Schoharie	2
Francis, Griffith, Remsen.......Oneida	11
Frank, Edward J., Deposit....Broome	4
Frank, N., Deposit...........Broome	1
Franklin, Horace D., Preston....Chn.	1
Frayer, Leon W., Liverpool, R. D. 2, Onondaga	2
Frear, L. B., Ithaca........Tompkins	1
Frederick Brothers, Seward..Schoharie	12
Fredericks, Julius V., Canajoharie..Mtg.	15
Freeborn, F. L., New Woodstock..Mad.	75
Freeborn, G. M., Cazenovia...Madison	29
Freeborn, J. C., New Woodstock..Mad.	4
Freeman, Arthur R., Gouverneur, St. Lawrence	17
Freeman, Peter, Wellsville...Allegany	1
Freer, C. B., Otego............Otsego	23
Freer, S. G., Richfield Springs..Otsego	1
French, Chas. I., Potsdam......St. L.	5
Friel, Dan, Ellicottville...Cattaraugus	2
Frisbie, M. G., Cuyler.......Cortland	11
Frisbie, W. H., Delhi, R. D. 3...Del.	8
Fronk, Fred, Catatonk.........Tioga	4
Frost, Geo., Jr., Stockbridge..Madison	30
Frost, J. R., Munnsville......Madison	129
Frutchey, P. G., So. Livonia......Liv.	5
Fucker, Williams R., Solsville.Madison	1
Fuggle, J. A., Cazenovia.....Madison	56
Fuggle, S. R., Delphi Falls..Onondaga	30
Fuller Bros., Hunt ....Livingston	16
Fuller, Bradley, Utica ....Oneida	50
Fuller, D. H. & H. H., Scio..Allegany	50
Fuller, G. W., Corning.......Steuben	6
Fuller, Harry L., Greenwich.....Was.	1
Fuller, Haviland J., Fulton....Oswego	6
Fuller, H. T., Peru...........Clinton	35
Fuller, J. B., Marcy..........Oneida	13
Fuller, James S., Deerfield.....Oneida	1
Fuller, O. J., Hunt........Livingston	14
Fullmer, G. H., Union........Broome	4
Fullmer, Harry, Union ....Broome	4
Fults, H. W., Philadelphia...Jefferson	4
Gaffney, Daniel J., Highland...Ulster	†7
Gaffney, John T., New Paltz...Ulster	3
Gage, A. J., Kinderhook.....Columbia	26
Gage, Minor, Union ....Broome	3
Gage, Nelson W., Delanson.......Scy.	†17
Gage, Richard J., Ithaca, R. D. 36, Tompkins	7
Gale, Byron, Brushton ......Franklin	3
Gale, B. A., Oxford.........Chenango	3
Gale, Julius, Brushton ......Franklin	1
Gale, W. B., Groton........Tompkins	4
Gallagher, Larry, Oxford....Chenango	3
Gallets, Jos. A., Allegany..Cattaraugus	20
Gallup, John Jay, Altamont...Albany	2
Gallup, O. P., Homer........Cortland	5
Galusha, David K., Groton..Tompkins	1
Ganong, Willis A., Mahopac...Putnam	10
Ganter, R. H., Watertown...Jefferson	20
Gardner & Misner, Centerville Sta..Sul.	40
Gardner, Chas. H., Oriskany...Oneida	1
Gardner, Clarence E., Cooperstown, R. D. 5 ....Otsego	4
Gardner, Fred G., Alexander..Genesee	6
Gardner, G. L., Rodman.....Jefferson	1
Gardner, Miles C., Watertown, Route E .... Jefferson	†8
Garlock, A. N., Marion........Wayne	1
Garnsey, W. P., Rexford.....Saratoga	15
Gates, A. J., McDonough....Chenango	1
Gates, Floyd J., Jamesville..Onondaga	3
Gates, John S., Homer......Cortland	16
Gates, John W., Chittenango..Madison	60
Gates, N. L., Phoenix........Oswego	4
Gaus, Frederick E., Utica......Oneida	11
Gay, C. S., Preble..........Cortland	14
Gay, E. T., Attica..........Wyoming	4
Geer, C. H., Lebanon........Madison	†1
Geisenhoff, F. C., Durhamville..Oneida	2
Gelder, Jay, Kanona.........Steuben	16
George, A. O., Breesport.....Chemung	6
Gerow, Clarence H., Washingtonville, Orange	75
Gerow, Joseph C., Blooming Grove, Orange	65
Gerwig, E. W., Verona........Oneida	3
Getman, H. H., Richfield Springs..Ots.	3
Gibbs, Frank, Mexico.........Oswego	12
Gibson, Eugene, Beaver Meadow..Chn.	6
Gibson, Jesse, So. Hartford......Was.	7
Gibson, Wayne, Orleans Four Corners, Jefferson	1
Gidley, Henry E., Moores Mills...Dut.	1
Gifford, Frank A., Valley Falls...Ren.	18
Gifford, W. F., Morris.........Otsego	8
Gilbert, Allen, Mannsville....Jefferson	20
Gilbert, W. E., Fulton, R. D. 4..Osw.	4
Gilbert, Walter L., Hyde Park....Dut.	3
Gildersleeve, L. B., E. Northport..Suf.	11
Gildersleeve, W. D. & Bertha V., Roseboom .... Otsego	..
Giles, C. A., & Son, Apalachin..Tioga	4
Giles, C. T., Apalachin.........Tioga	4
Giles, Frank, Forestville...Chautauqua	7
Giles, F. L., Ellenburg Depot..Clinton	1
Gill, E. D., Morrisville.......Madison	7
Gillett, Chas. I., Antwerp....Jefferson	3
Gillette, E. S., Watertown...Jefferson	30
Gillette, S. L., LaFargeville..Jefferson	1
Gillis, Theodore, Salem...Washington	4
Gilmore, James J., Geneseo..Livingston	1
Gilmour, Robert, Morristown....St. L.	47
Glass, William C., Lisbon.......St. L.	1
Gleason, A. Lincoln, Ashville....Cha.	13
Glover, A. H., Kanona........Steuben	†5
Goble, J. O., Florida..........Orange	7
Godfrey, O. J., & Co., Pennellville..Osw.	67
Golden, W. J., Waverly.........Tioga	2
Goodell, Mrs. Ella C., Canastota..Mad.	1
Goodell, H. V., Kirkville....Onondaga	4
Goodfellow, Frank, Ft. Edward..Was.	9
Goodnough, C. S., Edwards.....St. L.	1
Goodnow, Darwin E., So. New Berlin, Chenango	5
Goodrich, F. C., E. Chatham......Col.	2
Goodrich, Harry A., Owego.....Tioga	1
Goodrich, Joseph B., Beerston....Del.	3
Goodson, William, Deansboro..Oneida	9
Goodwin, Grove H., Baldwinsville, Onondaga	15
Goslee, H. H., & Son, Oneida..Madison	12
Gostling, E., Morrisville .....Madison	†6
Gould, Frank W., Walton...Delaware	8
Gould, James A., Merrifield....Cayuga	14
Gould, W. T., So. Kortright..Delaware	4
Goulding, H. M., Watertown..Jefferson	1
Goutremont, Wm. S., Castorland.Lewis	1
Gow, William, Johnsonville.Rensselaer	12
Gowanda State Homeopathic Hospital, Collins .... Erie	11
Graham, Clayton, Watkins...Schuyler	4
Gramps, Elmer, Fort Plain......Mtg.	1
Gramps, Harvey, Fort Plain.....Mtg.	25
Grandusky, A. J., Olean..Cattaraugus	25
Granger, Alfred L., Copenhagen...Jef.	25
Grant, E. R., McGraw.......Cortland	1

† Including pure-bred, not registered.

Grant, Geo. E., So. Hammond...St. L.	13
Graves, B. C., Castorland......Lewis	†9
Graves, Chas. A., Carthage..Jefferson	5
Graves, E. W., So. Apalachin....Tioga	15
Graves, F. L., Philadelphia..Jefferson	2
Graves, I. D., Prattsburg......Steuben	1
Gray, Chas. H., Berkshire:......Tioga	2
Gray, Emmett J., Whitehall.....Was.	7
Gray, G. F., Lima..........Livingston	1
Gray, Henry, & Son, Greenwich..Was.	30
Gray, Lucian P., Carthage...Jefferson	7
Gray, W. J., Lisbon......St. Lawrence	1
Greaves, G. H., Whitney Point...Brm.	60
Green Hill Farm, Goshen......Orange	1
Green, C. Germain, Hubbardsville.Mad.	5
Green, E. S., Goldenbridge.......Wes.	7
Green, John T., Groton.....Tompkins	11
Green, M. A., Alfred Station..Allegany	25
Green, S. C., Fine.......St. Lawrence	1
Green, Thomas, Hamilton ....Madison	7
Greene, C. A., & Son, Perryville..Mad.	10
Greene, E. V., Alfred Station.Allegany	10
Greene, Fay D., W. Winfield..Herkimer	13
Greene, F. J., Center Berlin......Ren.	2
Greene, G. Maurice, Willet...Cortland	17
Greene, Herbert H., Copenhagen.Lewis	5
Greene, H. L., Sherburne....Chenango	3
Greene, J. M., Andover......Allegany	16
Greenley, Geo., Adams.......Jefferson	13
Greenman, A. H., Cazenovia..Madison	5
Madison	5
Greenwood, John W., Jamestown.Cha.	7
Gregg, W. L., Phoenix........Oswego	3
Gregory Bros., Schroon Lake....Essex	8
Gregory, D. J., Colchester....Delaware	10
Gregory, F. E., & Bro., Van Etten, Chemung	4
Gregory, John F., Elmira, R. D. 4.Chm.	11
Grenell, W. H., Pierrepont Manor..Jef.	70
Gridley, K. H., Dryden......Tompkins	1
Gridley, M. J., Alfred Station.Allegany	18
Gridley, Oliver G., Kirkville.Onondaga	..
Grierson, E. J., Franklinville......Cat.	7
Griffen, Charles, Kill Buck.......Cat.	9
Griffin, J. H., Moira.........Franklin	16
Griffin, M. C., Oxford.......Chenango	5
Grippin, B. B., Saratoga Springs..Sar.	9
Griswold, C. D., Dryden.....Tompkins	19
Groat, W. R., & Robotham, G. W., Canastota .... Madison	18
Groff, Wm., Westford..........Otsego	1
Gros, Charles L., Fonda...Montgomery	8
Gross, Orra S., Greene......Chenango	6
Grosvenor & Fiven, Lebanon..Madison	16
Grove, E. E., Middleport......Niagara	2
Grow, Lawrence L., Fort Jackson.St. L.	90
Guernsey, F. & C. R., Schoharie...Sco.	1
Guilford, Chas. F., Friendship.Allegany	4
Gurnee, F. D., Orleans Four Corners, Jefferson	4
Gutchess, Louis W., Port Byron..Cay.	1
Guthrie, F. F., Earlville......Madison	6
Haas, Lewis, Est., Redwood...Jefferson	18
Haas, Valentine, Evans Mills.Jefferson	3
Hackett, Dr. E. H., Massena...St. L.	4
Hackett, S. O., Hume........Allegany	2
Hadden, Clarence A., Port Byron..Cay.	5
Hadley, G. W., West Winfield....Her.	8
Hadlock, Grover C., Hammondsport.Stu.	2
Hagan, John I., Mannsville..Jefferson	30
Hagan, J. W., Philadelphia..Jefferson	1
Hagan, S. W., Mannsville....Jefferson	8
Haggett, Sidney, Jordan.....Onondaga	3
Haight, C. A., & Isaac, Millbrook..Dut.	25
Haight, Delano, Bangall......Dutchess	†65
Haight, Edmund, Potsdam......St. L.	1
Haight, W. H., Fishkill......Dutchess	1
Haile, M. H., Bigelow....St. Lawrence	8
Halbert, Samuel L., Gilbertsville..Ots.	2
Halbert, Thomas E., Gilbertsville.Ots.	15
Hale, George M., Sinclairville....Cha.	2
Hale, J. E., Potsdam.....St. Lawrence	†12
Haley Bros., Sherburne......Chenango	5
Hall, Albert A., Hoosick Falls....Ren.	1
Hall, A. J., & Son, Little Genesee.Alg.	30
Hall, E. D., Perrysburg...Cattaraugus	1
Hall, Earl L., Oneonta........Otsego	45
Hall, Elbert R., Cortland, R. D. 6.Cor.	4
Hall, F. S., E. Chatham.....Columbia	1
Hall, John, Moravia...........Cayuga	2
Hall, Nelson V., Hannibal.....Oswego	1
Hall, Ralph S., Farmersville......Cat.	1
Hall, W. R., Ithaca.........Tompkins	3
Halladay, Fletcher J., Jamestown.Cha.	10
Hallenbeck, Albert, Copake...Columbia	1
Halliday, C. W., No. Chatham....Col.	5
Hallock, C. J., Washingtonville.Orange	25
Hallock, G. N., Washingtonville.Orange	8
Hallock, I. P., So. Centerville..Orange	†3
Hallock, W. M., Spencer........Tioga	43
Hallock, W. N., Bath.........Steuben	6
Halloran, Daniel W., Franklinville.Cat.	14
Halstead, J. F., Unionville.....Orange	7
Halstead, S. S., New Paltz.....Ulster	9
Ham, John M., Millbrook....Dutchess	32
Hamblet, I. O., Hannibal, R. D. 2.Osw.	1
Hamer, T. W., Lacona.........Oswego	1
Hamilton, Fred D., Erieville..Madison	4
Hamilton, W. C., Bainbridge.Chenango	1
Hamlin, C. H., Afton........Chenango	14
Hamlin, J. Frank, Clinton......Oneida	1
Hammond, C. N., Cuba........Allegany	2
Hammond, Samuel D., Marathon.Cor.	13
Handy, H. H. T., Cazenovia...Madison	20
Hanford, Geo., Elmira.......Chemung	11
Hanks, Otis, Friendship......Allegany	1
Hanmer, J. Marshall, Jordanville.Her.	1
Hannum, F. J., Mayville..Chautauqua	1
Hanson, J. C., Wallkill.........Ulster	7
Hanue, T. W., Lacona.........Oswego	1
Harbeck, Jay B., Black Creek.Allegany	7
Hardenbergh, C. C., Stone Ridge.Ulster	4
Harder, W. H., Delhi........Delaware	1
Harding, Thomas S., Gilbertsville..Ots.	†3
Harger, E. B., Afton........Chenango	1
Harkenrider, Wm., Rexville....Steuben	3
Harlow, C. W., Crystal Run....Orange	4
Harmon, J. M., Sinclairville......Cha.	†15
Harriman, Barnett, Massena.....St. L.	2
Harriman, Walter I., Chase Mills.St. L.	1
Harrington Sisters, Sherburne ...Chn.	30
Harrington, B. F., Rathbone..Steuben	10
Harrington, Deat J., Cincinnatus..Cor.	7
Harrington, H. L., Hartwick...Otsego	12
Harrington, Menzo I., Bainbridge.Chn.	1
Harrington, Ralph, Greene...Chenango	4
Harris, Adelbert, Poolville.....Madison	11
Harris, Allen, Great Valley.Cattaraugus	5
Harris, Chas. L., & Geo. H., Penfield Monroe	21
Harris, E. A., Scio..........Allegany	2
Harris, Morgan C., Newport..Herkimer	1
Hart, Byron W., LaFargeville.Jefferson	5
Hart, C. A., McLean........Tompkins	13
Hart, Charles M., Locke, R. D. 20.Cay.	20
Hart, Lyle S., Mexico.........Oswego	1
Hart, Mrs. Sarah T., Union Valley.Cor.	12
Hartley, Chester A., Gouverneur.St. L.	16
Hartman, Henry, Woodbourne.Sullivan	6
Hartman, John W., Chatham.Columbia	2
Hartshorn, A. A., Hamilton...Madison	65
Hartshorn, H. W., Hamilton..Madison	25
Hartshorn, R. P., Lebanon....Madison	23
Harvey, E. E., Cincinnatus...Cortland	20
Harvey, L. L., Marathon.....Cortland	18
Harvey, Murray, So. Hammond..St. L.	9
Haskell, Elmer, Corfu.........Genesee	4
Haskin, Frank, Preston Hollow.Albany	1
Haskin, S. W., Bates........Schoharie	1
Hastings & Akley, DeKalb Junction, St. Lawrence	12
Haswell, W. W., Hoosick...Rensselaer	4

† Including pure-bred, not registered.

Hatch, C. P., Cambridge..Washington	12
Hatch, Hyatt C., Atlanta.....Steuben	3
Hatfield, George, Bliss.......Wyoming	1
Hathaway, Geo. W., Schuylerville..Sar.	13
Hathaway, H. W., & Son, Moravia.Cay.	1
Hathaway, K. J., Otego........Otsego	5
Hathway, J. R., Homer.......Cortland	20
Hausner, C. W., Odessa......Schuyler	†6
Haven, H. J., Heuvelton..St. Lawrence	7
Haviland, Joseph, Glens Falls..Warren	27
Haviland, Willis J., Glens Falls..War.	1
Hawes, F. L., Ithaca........Tompkins	1
Hawkins, Ira A., Warwick......Orange	†40
Hawley, C. B., Waterford....Saratoga	25
Hawley, C. H., Red Creek......Wayne	2
Haws, Clinton W., Hannibal...Oswego	2
Hawthorne, R. W., Fulton.....Oswego	6
Hawthorne, Wm., Deerfield.....Oneida	1
Hayden, Orlando, & Son, Potsdam.St. L.	†8
Hayes, M. W., Staatsburg....Dutchess	11
Hayward, A. C., Augusta.......Oneida	6
Hayward, D. S., Oriskany Falls..Oni.	5
Hazard, F. R., Syracuse.....Onondaga	40
Hazelden, W. E., Clinton......Oneida	1
Head, Mrs. E. B., & Evans, Fred, Lebanon .... Madison	†14
Healey, X. P., Norfolk...St. Lawrence	1
Heath, Harvey B., Ouaquaga...Broome	1
Heath, H. R., McGraw.......Cortland	3
Hecox, L. P., Morrisville.....Madison	†1
Hecox, Vander B., Sauquoit....Oneida	8
Helmer, A. E., & Ashbocker, G. P., Evans Mills,..............Jefferson	70
Helmer, Fred A., Jordanville.Herkimer	6
Henderson, R. H., Marcellus.Onondaga	8
Henry, Edwin J., E. Homer..Cortland	1
Henry, Geo. W., Walden.......Orange	3
Henshaw, Florence E., Willink....Erie	1
Herder, Geo. B., Blossvale......Oneida	6
Herring, John, Otego ....Otsego	14
Herrington, Edward D., Tiashoke.Ren.	8
Herrington, H. H., Stockbridge...Mad.	2
Herrington, Nathan W., Hoosick Falls, Rensselaer	1
Heselton, Bert, Whitesville...Allegany	4
Heslin, Edward, Canastota...Madison	13
Hess, Absalom B., Broadalbin..Fulton	8
Hess, Clarence D., Pennellville.Oswego	5
Hess, Forrest L., Phoenix.....Oswego	11
Heuson, Robert W., Geneva....Ontario	24
Hewitt, A. C., Oriskany Falls..Oneida	2
Hewitt, C. W., Gouverneur.St. Lawrence	10
Hewitt, L. H., Cortland......Cortland	..
Hewke, A. C., & Knapp, M. A., Middletown .... Orange	1
Hewlett, B. R., Interlaken......Seneca	6
Hewlett, John M., Bath.......Steuben	7
Hewson, Bertrand, Lyons.......Wayne	1
Hibbard, Dever, Castle Creek...Broome	3
Hibbard, R., E. Homer......Cortland	12
Hickling, T. W., Edmeston.....Otsego	2
Hickok, Walt, Amsterdam......Fulton	3
Hicks, George W., Auburn.....Cayuga	12
Hicks, J. M., Fernwood........Oswego	9
Hicks, Lewis, Ensenore ....Cayuga	27
Hicks, Richard, Auburn ....Cayuga	19
Higgins, A. B., Philadelphia..Jefferson	1
Hilbert, Fred E., Candor........Tioga	15
Hill, Asa K., Oswego, R. D. 4..Oswego	1
Hill, C. H., Canastota........Madison	9
Hill, C. L., Greene..........Chenango	5
Hill, Daniel, Greenwich....Washington	2
Hill, Fred C., Owego..........Tioga	12
Hill, Max E., New Albion..Cattaraugus	4
Hill, V. Edgar, Stony Ford.....Orange	6
Hills, F. E., Almond.........Allegany	3
Hilts, Leslie R., Gouverneur.....St. L.	1
Hilts, S. G., Gouverneur..St. Lawrence	2
Hinds, C. J., Springfield Center..Otsego	11
Hinds, Wm. F., DeRuyter.....Madison	10
Hine, James H., Newfield....Tompkins	1
Hines, A. L., Newport.......Herkimer	5
Hinkley, D. J., Estate, W. Edmeston, Otsego	39
Hinsdale, Bertha E., Fulton....Oswego	25
Hirschey, William, Castorland...Lewis	2
Hitchcock, B. D., Mannsville..Jefferson	1
Hitchcock, Clarence D., E. Randolph, Cattaraugus	2
Hitchcock, C. W., Madison....Madison	1
Hitchcock, N. J., Lebanon....Madison	1
Hitchcock, W. L., & Son, Cambridge, Washington	15
Hoag, William C., Salamanca.....Cat.	4
Hobbs, Alfred, 347 Delaware Ave., Syracuse .... Onondaga	18
Hoese, Conrad, Sprakers...Montgomery	20
Hoffman, Chas., Guilford ....Chenango	13
Hoffman, Fred. L., Boonville...Oneida	2
Holbert, Ezra, Lake...........Orange	34
Holbert, G. W., Elmira.......Chemung	14
Holbrook, Chas. F., Maine.....Broome	1
Holcomb Bros., Westfield...Chautauqua	1
Holden, H. P., Newark Valley...Tioga	2
Holdridge, D. A., W. Burlington.Otsego	1
Holdridge, W. L., Unadilla Forks..Ots.	1
Hole, Henry, Skaneateles....Onondaga	4
Holl, James, Lincklaen .....Chenango	2
Hollenbeck, M. C., Jasper.....Steuben	..
Hollenbeck, Seward E., Tully.....Ono.	†1
Hollis, D. J., Lacona..........Oswego	50
Hollis, H. A., Pulaski.........Oswego	1
Hollis, Lawrence, Lacona .....Oswego	1
Hollister, Sereno, Whitehall.Washington	30
Holmes, A. E., Philadelphia..Jefferson	3
Holmes, Reuben R., DeRuyter.Madison	15
Hooker, Fred B., Newark Valley.Tioga	1
Hooker, S. Percy, LeRoy......Genesee	19
Hooker, Wm., Pawling ......Dutchess	1
Hooker, Warren B., Fredonia.....Cha.	†17
Hoornbeck, Louis A., Napanoch.Ulster	10
Hopkins, B. J., Westfield..Chautauqua	5
Hopkins, Fred., Wallace......Steuben	2
Hopkins, F. S., Burlington Flats.Otsego	6
Horner, J. G., Lamson......Onondaga	25
Horth, D. H., Leon.......Cattaraugus	4
Horton, Edwin N., New Berlin...Chn.	11
Horton, Sidney D., Salamanca.....Cat.	26
Hotaling, W. H., Apulia Sta..Onondaga	24
Hotchkiss, Chas., Locke.......Cayuga	3
Hotis, F., & Son, Evans Mills.Jefferson	1
Hough, Frank A., Massena.St. Lawrence	1
Houghton, James, & Son, Williamstown, Oswego	7
Houlihan, N., Waterford.....Saratoga	25
Houseknecht, David, Corfu.....Genesee	†1
Houston, Chas. M., Wisner.....Orange	3
Houston, James I., Middletown.Oswego	3
Howard, Clayton A., Nile....Allegany	†2
Howard, J. G., Sauquoit.......Oneida	16
Howard, John M., Sherburne.Chenango	†65
Howard, H. H., Bridgewater...Oneida	3
Howe, A. D., Whitesville.....Allegany	7
Howe, Hugh C., Sherman..Chautauqua	9
Howlett, A. M., So. Dayton......Cat.	8
Hoxie, A. S., Leonardsville...Madison	13
Hoyt, C. D., Bemus Point..Chautauqua	12
Hoyt, C. W., Middletown......Orange	†16
Hoyt, E. M., & Son, Jasper...Steuben	1
Hoyt, F. D., Halsey Valley......Tioga	5
Hoyt, Wesley, Maryland ....Otsego	4
Hoyt, W. M., Walton........Delaware	1
Hubbard, Geo., Randolph..Cattaraugus	17
Hubbs, Geo., Kirkville ......Onondaga	8
Hubbs, Harold F., Kirkville...Madison	44
Huffo, Jefferson M., Livonia.Livingston	4
Hughes, G. T., Barneveld......Oneida	24
Hughes, W. H., Webster Sta..Madison	25
Hull, Elmer V., Berlin.....Rensselaer	1
Hull, Willis T., Sherburne...Chenango	†5
Hulse, S., Middletown ....Orange	12
Hulse, Theodore T., Middletown..Ora.	16

† Including pure-bred, not registered.

Hume, Jas. O., Garrattsville....Otsego	3
Humphries, C. E., McGraw...Cortland	4
Humphries, Louis, Remsen ....Oneida	6
Humstone, A. E., Vernon.......Oneida	6
Hundley, T. T., Canton...St. Lawrence	2
Hunt, A. L., Killawog........Broome	5
Hunt, B. R., Canastota.......Madison	20
Hunt, Charles, Delphi Falls.Onondaga	4
Hunt, Clarence F., Oran.....Onondaga	150
Hunt, E. L., Hubbardsville. .Madison	22
Hunt, F. L., & I. H., New Woodstock, Madison	20
Hunt, G. DeForest, Richland...Oswego	6
Hunt, Philo, New Berlin....Chenango	2
Hunt, W. C., Fayetteville....Onondaga	25
Hunter, Chas. W., Newburg, R. D. 3, Orange	35
Hunter, E. C., Merrifield......Cayuga	24
Hunter, Howard H., Ensenore..Cayuga	7
Hunter, William, Fulton ......Oswego	22
Huntington Farms, Rome......Oneida	†9
Hurd, C. C., So. Dayton..Cattaraugus	1
Hurd, Melville J., Elma..........Erie	1
Hurlburt, Frank W., Boonville..Oneida	7
Hurlburt, Henry, Hinsdale.Cattaraugus	5
Huse, J. E., Evans Mills.....Jefferson	†14
Huston, W. B., Hector.......Schuyler	†5
Hutchings, H. F., W. Danby....Tom.	1
Hutchins Bros., Pulaski ....Oswego	4
Hutchins, E. L., Massena.St. Lawrence	3
Hutton, I. L., Putnam Sta.Washington	4
Huyck, A. C., Hambletville..Delaware	2
Hyatt, C. B., Cazenovia.......Madison	1
Hyde, Chas. H., Watertown..Jefferson	9
Illenberg, George F., Florida...Orange	1
Illig, F. C., Ilion...........Herkimer	24
Ingalls, Amasa G., E. Hamilton..Mad.	13
Ingalls, B. E., Hartwick Seminary.Ots.	..
Ingersoll Bros., Fultonville.......Mtg.	9
Inman, C. L., Norwich......Chenango	†1
Inscho, H. S., Bradford.......Steuben	2
Ireland, C. W., Co., Bainbridge...Chn.	2
Irish, L. W., Niverville......Columbia	2
Irish, W. A., Scio..........Allegany	4
Irving, Andrew, Ogdensburg.....St. L.	25
Ives, E. C., Norway.........Herkimer	20
Ives, G. G., Rices...........Jefferson	1
Ives, Otto L., Guilford......Chenango	115
Jackson, Addison, Castile....Wyoming	1
Jackson, C. H., Shushan...Washington	1
Jackson, J. A., Durhamville....Oneida	1
Jackson, W. Herbert, Boonville.Oneida	6
Jacobs, Geo., Weedsport ......Cayuga	†2
James, E. T., & Son, Cuba...Allegany	10
James, Watkins L., Rushford.Allegany	5
Jamieson, Alexander, Ogdensburg.St. L.	5
Jamieson, George E., Canton....St. L.	4
Jamison, Wm., Canisteo ......Steuben	1
Jaquay, Chester D., So. Edmeston.Chn.	1
Jaquay, John, Poolville ......Madison	30
Jaquish, E. D., Elton....Cattaraugus	1
Jaquith, J. F., Hammond..St. Lawrence	11
Jarvis Bros., Flycreek ....Otsego	66
Jarvis, Edwin M., Flycreek....Otsego	15
Jarvis, Ira S., Hartwick Seminary.Ots.	35
Jeffords, Harry A., Whitney Point.Brm.	6
Jenkins, Albert, Granville..Washington	1
Jenkins, Mrs. H., Walton....Delaware	9
Jenks, M. C., W. Edmeston.....Otsego	18
Jennings & Davis, Ballston Spa...Sar.	1
Jennings, Cady, Ballston Spa.....Sar.	1
Jennings, Chauncey L., Central Square, Oswego	5
Jennings, Geo. E., Patterson..Putnam	14
Jerome, J. S., & Son, Camillus...Ono.	5
Jerome, L. L., LaFargeville...Jefferson	2
Jessup, Chas. L., Florida......Orange	4
Jessup, Chas. W., Florida.....Orange	7
Jewell, B. V., Mt. Upton....Chenango	2
Jewett, C. H., & Son, Oriskany Falls, Oneida	10
Jewett, Earl B., Oriskany Falls Oni.	10
Jillson, Henry O., Chittenango....Sul.	1
Johannes, Andrew, Belfast...Allegany	2
Johnson, Andrew J., Lockport, R. D. 8, Niagara	†5
Johnson, C. A., Belleville....Jefferson	12
Johnson, Clarence G., Sinclairville, Chautauqua	12
Johnson, E. B., Chaumont...Jefferson	8
Johnson, Elmer C., Locke.....Cayuga	4
Johnson, E. C., Washingtonville..Ora.	5
Johnson, Erastus E., Pharsalia..Chn.	1
Johnson, Ernest M., Richfield Springs, Otsego	45
Johnson, E. R. & G. F., Chaumont..Jef.	..
Johnson, F. E., & Son, Morristown, St. Lawrence	30
Johnson, John, Cherry Valley..Otsego	1
Johnson, J. Millard, Deerfield..Oneida	5
Johnson, L. C., Moravia......Cayuga	3
Johnson, Robert E., No. Lawrence, St. Lawrence	4
Johnston, G. W., Oneida.....Madison	3
Johnston, Isaac, & Sons, Savona..Stu.	9
Johnston, Josephus, Walden....Orange	3
Johnston, M. C., Sidney.......Delaware	50
Jones & Gebble, Lowville.......Lewis	8
Jones, Benj. F., Marcy........Oneida	2
Jones, C. W., Dayton....Cattaraugus	8
Jones, D. B., Groton.......Tompkins	6
Jones, David R., Remsen......Oneida	19
Jones, Evan J., Holland Patent..Oni.	12
Jones, Francis M., Clinton....Oneida	51
Jones, Geo., Canastota ......Madison	6
Jones, G. W., Stittville.......Oneida	6
Jones, H. D., Chepachet.....Herkimer	8
Jones, I. Willard, Wellsville..Allegany	18
Jones, J. G., Ithaca, R. D. 5....Tom.	1
Jones, J. H. & F. N., Whitesville..Alg.	3
Jones, John O., Remsen.......Oneida	†13
Jones, John R., Morrisville...Madison	5
Jones, J. W., Cassville........Oneida	1
Jones, John W., Morrisville..Madison	30
Jones, John W., Willet......Cortland	11
Jones, L. E., Sheds..........Madison	30
Jordan, B. D., Cuba..........Allegany	2
Joslin Bros., Chemung.......Chemung	1
Joslin, M. F., Frankfort.....Herkimer	1
Joslyn, W. H., Vernon........Oneida	1
Juckett, B. D., Whitehall..Washington	8
Judd, Seymour H., Sheds....Madison	3
Judd, Sylvester N., Canton.....St. L.	8
Kahler, Oscar, Big Flats....Chemung	3
Kaliniak, Thomas, Stony Ford..Orange	5
Kane, Seward T., Holland Patent..Oni.	1
Kane, T. C., Scio.............Allegany	1
Kane, W. S. & C. E., Malone..Franklin	1
Karlen, J. D., Boonville.......Oneida	4
Karpinski, Henry J., Oswego..Oswego	26
Karr, J. M., Almond.........Allegany	11
Karr, Leon M., Hornell......Steuben	13
Kasson, V. D., Camillus....Onondaga	1
Kattmann, F. A., Montgomery..Orange	4
Kavanagh, Clarence, Alexandria Bay, Jefferson	1
Keefe, John P., Rexville......Steuben	15
Keefer, George D., Liverpool.....Ono.	8
Keeler, A. A., Liverpool....Onondaga	3
Keeler, L. W., & Sons, Bangor....Fr.	11
Keene, E. C., Lacona.........Oswego	5
Keeney, Burton L., Elmira...Chemung	1
Keeney, C. N., LeRoy.......Genesee	3
Keeney, Howard W., Cuyler..Cortland	6
Keith, Geo. W., No. Brookfield...Mad.	2
Kelkenberg, Chas., Jr., Clarence Center, Erie	1
Keller, Albert L., Amenia...Dutchess	1
Keller, F. A., No. Cuba......Allegany	15
Kelley, Alex., Williamstown....Oswego	1
Kelley, Alexander, Greenwood.Steuben	5
Kelley, W. W., Wassaic.....Dutchess	6
Kellogg, Henry, W. Rush.....Monroe	1

† Including pure-bred, not registered.

Kellogg, H. T., Plattsburg....Clinton	5
Kellogg, O. U., Cortland.....Cortland	100
Kelly, Benj. E., Ellenville......Ulster	3
Kelly, Charles, Rexville ......Steuben	2
Kelly, John, Salem ......Washington	3
Kelly, M. H., Roxbury......Delaware	11
Kelly, Thomas D., Pompey..Onondaga	3
Kelsey, C. R., Hammond..St. Lawrence	5
Kelsey, Frank N., Deansboro...Oneida	4
Kelsey, J. W., Philadelphia..Jefferson	1
Kendrick, M. H., Sherburne..Chenango	4
Kennard, Geo. W., Deansboro..Oneida	7
Kennedy Bros., Clayville......Oneida	1
Kennedy, Ellen E., Otselic...Chenango	2
Kennedy, J. A., Otselic.....Chenango	3
Kennedy, Wm., Cobleskill....Schoharie	5
Kenny, Archie, Rensselaer Falls..St. L.	3
Kenotin Farm, Washington Mills..Oni.	6
Kent, Nelson C., Holmes....Dutchess	2
Kentfield, Homer L., Unadilla....Dela.	9
Kenwell, Isaac, Indian Lake....Ham.	5
Kenyon, H. P., Hastings......Oswego	4
Kenyon, H. S., Locke.........Cayuga	9
Kenyon, R. G., Newark Valley..Tioga	1
Keough, James, Jamesville..Onondaga	1
Kern, John W., Springville.......Erie	1
Kerr, Edwin M., Cambridge.....Was.	6
Kershaw, Herbert J., Sherburne..Chn.	12
Kessler, E. A., Conewango.Cattaraugus	1
Keyes, W. L., Deerfield........Oneida	12
Keyser, Floyd B., Breakabeen....Sco.	5
Kiel, E. H. A., Stevensville...Sullivan	25
Kilborn, J. R., Cape Vincent......Jef.	8
Kilbury, D., Hornell, R. D. 2..Steuben	25
Kile, S. B., Ferndale........Sullivan	..
Kilts, A. C., Ava.............Oneida	1
Kilts, Daniel E., Seward....Schoharie	7
Kimmey, W. S., E. Schodack.....Ren.	5
King, A. H., Afton.........Chenango	1
King, Charles, Buskirk Bridge....Was.	10
King, Clyde B., Guilford....Chenango	1
King, E. A., Central Bridge..Schoharie	8
King, H. T., Chittenango.....Madison	28
King, J. J., Verona Sta.......Oneida	8
Kingsley, E. V., Castile.....Wyoming	7
Kingsley, W. D., Massena......St. L.	1
Kinne, C. H., New Woodstock....Mad.	30
Kinne, Lee, Hartwick Seminary..Ots.	21
Kinney, J. W., & Son, Port Crane, Broome	3
Kinslow, B. E., Phoenix.......Oswego	†23
Kinyon, C. E., Fulton, R. D. 7....Osw.	2
Kirby, C. H., Bainbridge....Chenango	1
Kirk, C. W., Poughkeepsie....Dutchess	8
Kirkup, John, E. Homer.....Cortland	1
Kline, G. J., Stittville.........Oneida	1
Klinger, Z. T., Friendship...Allegany	2
Klock, D., Jr., Troy........Rensselaer	14
Klock, George A., E. Homer..Cortland	2
Klock, M. Crouse, Syracuse..Onondaga	24
Knapp, A. A., Preble........Cortland	39
Knapp, E. D., Winterton....Sullivan	2
Knapp, E. H., & Son, Fabius.....Ono.	68
Knickerbocker, Geo. H., Pine Plains, Dutchess	45
Knight, Wm. E., Edmeston....Otsego	12
Kniskern, Newton, Carlisle.......Sco.	7
Knoll, George, Parksville .....Sullivan	8
Knox, Harry Mason, Canton....St. L.	35
Koonz, A. S., Voorheesville....Albany	1
Kraatz, Louis, & Sons, Akron.....Erie	25
Kraff, Anthoney, Pompey...Onondaga	18
Krieger, Frank, Prattsville....Greene	1
Kuhrt, Reuben E., Forestville....Cha.	3
Kuney, H. W., Cuyler.......Cortland	2
Kutschbach, R. P., & Son, Sherburne, Chenango	51
Ladd, Martin, W. Edmeston....Otsego	8
Lade, Wm. C., Kirkville......Madison	4
La Due, Georgia L., Weedsport...Cay.	7
La Frois, Joseph, Union Hill..Monroe	17
LaGosh, Fred, Granville..Washington	21
Laidlaw, Earl, Gouverneur.....St. L.	8
Laidlaw, Robert, Franklinville....Cat.	1
Lake, E. P., & Co., Harrisville...Lewis	2
Essex	1
Lake, E. P. & Co., Harrisville...Lewis	2
Lamb & Langworthy, E. Hamilton Madison	55
Lamb, Fred A., Munnsville....Madison	16
Lamb, Geo. W., E. Hamilton..Madison	26
Lamb, W. E., Hubbardsville...Madison	42
Lambert, F. G., & Son, Hudson...Col.	7
Lamkin, Almon, Newfield....Tompkins	1
La Motte, L. P., Freeville..Tompkins	10
Lampher, H. B., Copenhagen...Lewis	2
Lampman, John T., Claverack....Col.	2
Lamunion, A. L., New Woodstock.Mad.	43
Landow Bros., Clarence Center...Erie	1
Lane, Lewis B., Groton.....Tompkins	3
Lane, L. B., Harford.........Cortland	3
Lane, W. F., Groton........Tompkins	1
Langdon, Henry D., Canton.....St. L.	†4
Langford, E. R., Jamestown.....Cha.	5
Langworthy, C. R., Adams Center..Jef.	4
Langworthy, Daniel L., Alfred Station, Allegany	7
Langworthy, F. C., W. Edmeston..Ots.	†3
Langworthy, H., Hamilton....Madison	20
Langworthy, I. G., Hoosick Falls..Ren.	1
Langworthy, Dr. O. S., Hamilton..Mad.	1
Langworthy, Richard, Gerry.....Cha.	7
Langworthy, W. H., Alfred Station Allegany	1
Lansing, F. P., Copenhagen.....Lewis	36
Lansing, Wm. F., Little Falls....Her.	25
La Rock, A. B., Parish.......Oswego	4
La Rock, W. J., Evans Mills..Jefferson	6
La Selle, J. B., Georgetown..Madison	6
Lasher, N. V., Fultonville........Mtg.	11
Lathrop, Charles A., Sherburne..Chn.	26
Lathrop, H. N., Sherburne..Chenango	31
Latimer, F. H., Arkport......Steuben	12
Latimer, J. C., Tioga Center....Tioga	61
Lauber, H. B., Dairyland......Ulster	40
Laurence, Paul, Edmeston.....Otsego	2
Law, B. W., Collins.............Erie	1
Lawdon, W. N., Weedsport....Cayuga	8
Lawrence, C. F., Middletown...Orange	32
Lawrence, C. O., Schaghticoke...Ren.	1
Lawrence, F. A., Vernon......Oneida	14
Lawrence, George, Canastota..Madison	35
Lawrence, H. E., Newark Valley..Tio.	1
Lawrence, W. D., Adams....Jefferson	1
Lawrence, W. H., Clyde.......Wayne	1
Lawton, E. J., Norwich.....Chenango	1
Lawyer, Sosthenes, Cobleskill....Sco.	1
Leach, George, Randolph..Cattaraugus	1
Leach, J. A., Cortland......Cortland	60
Leadingham, James, Hammond..St. L.	30
Leamon, A., & Son, Central Bridge.Sco.	11
Learn, G. P., Salamanca..Cattaraugus	†1
Lebarron, John, Cambridge ......Was.	1
Lee, Anson L., Yorktown..Westchester	†17
Lee, David W., Middletown...Orange	1
Lee, F. M., & Williams, C. W., Alfred Station ....Allegany	8
Lee, G. F., Pawling.........Dutchess	6
Lee, Irving H., New Woodstock...Mad.	18
Lee, Jay W., Cazenovia......Madison	20
Leggett, Grant, Ghent.......Columbia	13
Lemaire, Joseph, Ulsterville....Ulster	1
Leonard, Adelbert C., Mt. Upton..Chn.	3
LeRoy, Marvin, Loche Sheldrake...Sul.	1
Letts Bros., Lawyersville....Schoharie	2
Levis, Thomas W., Richville....St. L.	8
Lewis, Bert L., Ashville.........Cha.	1
Lewis, C. V., Fulton..........Oswego	3
Lewis, E. A., Gilboa........Schoharie	1
Lewis, Geo. D., & Son, Mannsville.Jef.	14
Lewis, Geo. S., Rexville......Steuben	2
Lewis, Harris, Norwich .....Chenango	18
Lewis, Jay M., Findley Lake.....Cha.	1
Lewis, John J., Barneveld.....Oneida	3

† Including pure-bred, not registered.

Lewis, P. F., Jamestown..Chautauqua	9
Lewis, Sidney A., Campbell...Steuben	2
Lewis, T. C., Cassville........Oneida	11
Lewis, Walter W., Dahlia....Sullivan	2
Lewis, William A., Gilboa...Schoharie	†5
Libby, C. M., Forestville...Chautauqua	1
Liddle, Warren F., Cobleskill.....Sco.	12
Light, C. A., Morris...........Otsego	10
Lilley, D. M., Pulaski.........Oswego	6
Lillie, Frank F., Bouckville...Madison	10
Lillie, John N., Putnam...Washington	1
Lincoln Agricultural School, Lincolndale ....Westchester	2
Lincoln, E. L., Canton, R. D. 6..St. L.	20
Linderman Brothers, Allegany ....Cat.	13
Linderman, Charles O., Allegany..Cat.	7
Linderman, N. B., Allegany......Cat.	6
Lindquist, Anna, Jamestown ....Cha.	2
Lindquist, Charles, Jamestown...Cha.	9
Lindquist, Fred, Jamestown......Cha.	2
Lindsay, John C., Burt.......Niagara	†7
Little, Gould J., Lowman.....Chemung	†3
Livermore, H. B., Sangerfield..Oneida	12
Livermore, James M., Bouckville..Mad.	11
Livermore, Orlando, Newark Valley, Tioga	1
Livingston, Menzo, Sharon...Schoharie	†5
Lloyd, Davison, Amenia Union....Dut.	8
Lobdell, F. D., Sherburne...Chenango	2
Lobdell, George, Evans Mills.Jefferson	1
Lobdell, James W., Westerlo...Albany	..
Lockrow, W. E., Buskirk..Washington	15
Loid, Daniel, Big Flats......Chemung	18
Long Sault Development Co., Massena, St. Lawrence	8
Longwell, Alden, Savona......Steuben	3
Loomis Bros., Hubbardsville..Madison	16
Loomis, C. W., Ogdensburg......St. L.	24
Loomis, Geo. S., Richland.....Oswego	10
Loomis, P. A., Oxford......Chenango	2
Loomis, Ward C., Bainbridge.....Chn.	14
Loop, D. M., Hermon.....St. Lawrence	2
Loren, Augustus, Central Square..Osw.	8
Loren, C. P., Central Square...Oswego	20
Loren, F. B., Central Square...Oswego	19
Lorimer, George, Guilford...Chenango	9
Loring, Edgar, Goshen ....Orange	1
Loring, John D., Goshen.......Orange	27
Lortscher, C. R., Theresa....Jefferson	1
Lortscher, J. P., Evans Mills.Jefferson	1
Losee, William J., Morristown...St. L.	2
Lounsbery, C. R., Brookton..Tompkins	2
Lounsberry, Horace, & Son, Lounsberry, Tioga	20
Love, J. D., Sinclairville..Chautauqua	†6
Lovejoy, Charles E., Madison.Madison	9
Loveland, J. H., So. Granby...Oswego	1
Lovett, W. J., Brighton........Monroe	30
Low, H. L., Wallkill...........Ulster	25
Lowman & Roe, Lowman.....Chemung	10
Lowman, E. M., Lowman....Chemung	2
Lozier, F. E., Wallkill, R. D. 3..Ulster	2
Lucas, Mary O., Cazenovia....Madison	12
Lull, C. E., Morris...........Otsego	1
Lull, Galen F., Morris.........Otsego	6
Lumley, Wm. H., Gouverneur....St. L.	24
Lunt, C. S., Charlotte.........Monroe	45
Lusk & Forbes, Randolph.........Cat.	2
Lusk, Wallace, Marathon.....Cortland	17
Luther, E. J., Lawton............Erie	3
Lynch, James, & Son, Pratts Hollow, Madison	10
Lynch, P., Goshen ....Orange	1
Lynk, Worthy D., Elizaville...Columbia	2
Lyon, Archie, Black Creek....Allegany	10
Lyon, Edward, Norwich......Chenango	1
Mabey, J. W., Cuba.........Allegany	5
McAdam, John, Jamestown, R. D. 76, Chautauqua	3
McAdam, Quentin, Utica ......Oneida	150
McArthur, J. A., Remsen......Oneida	15

McArthur, J. W., & Sons, Red Creek, Wayne	1
McBride, William, Schaghticoke..Ren.	5
McBrier, E. M., E. Aurora......Erie	11
McCall, Alex., Caledonia...Livingston	2
McCarthy, Eugene, Brushton..Franklin	1
McCarthy, Wm. A., Addison..Steuben	1
McClintock, Charles, Dryden....Tom.	2
McCluer, Wm. B., Franklinville..Cat.	1
McClumpha, George H., Estate, Amsterdam .... Montgomery	18
McCord, George E., Gardiner...Ulster	7
McCormick, James, Greenwood, R. D., Steuben	3
McCormick, John, Moravia.....Cayuga	1
McCormick, John D., Ogdensburg..St. L.	1
McCumber, George, Greene.......Chn.	1
McCutcheon, James, & Son, Arcade Wyoming	1
MCcDonnell Bros., Mechanicville..Sar.	1
McDougall, J. H., Hammond....St. L.	13
McDougall, Susan, Hammond....St. L.	13
McElwain, John A., Conewango Valley . ...Cattaraugus	3
McElwain, J. W., Ft. Covington...Fr.	16
McElwain, Samuel F., Conewango Valley . ...Cattaraugus	17
McEvoy, James, Forestville.......Cha.	1
McEwin, G. W., Middletown....Orange	12
McGeoch, G. E., Cambridge......Was.	10
McGeorge, W. B., Franklinville....Cat.	4
McGill, Clint, Edwards...St. Lawrence	3
McGowan, A. J., No. Bangor..Franklin	13
McGraw, Frank E., Whitesville....Alg.	8
McGregor, Allen J., Hammond...St. L.	2
McGregor, D. E., Hammond.....St. L.	30
McGregor, Frank S., Hammond..St. L.	10
McGregor, J. A., Hammond.....St. L.	22
McIntosh, A. L., Almond.....Allegany	4
McIntosh, J. M., Gardiner......Ulster	†33
McKee, Andrew, Cortland.....Cortland	12
McKee, George H., Whitesville....Alg.	2
McKenna, Floyd, Ft. Covington....Fr.	2
Mackesy, Edmond, Phoenix..Onondaga	2
Mackey, Eli, Wallkill...........Ulster	†19
Mackey, E. D., Locke.........Cayuga	15
Mackey, R. C., Gilboa......Schoharie	7
McKinney, F. D., Orwell......Oswego	2
McKinney, George B., Cortland...Cor.	1
McKinney, John C., Montgomery..Ora.	9
McKinney, J. Todd, Montgomery..Ora.	6
McLane, George W., Lowville....Lewis	11
McLaury Bros., Portlandville...Otsego	20
McLaury, F. R., Deposit......Broome	50
McLean, Joseph, Center Village..Brm.	13
McLean, Jos. M., Center Village..Brm.	14
McLenithan, Austin J., Cambridge, Washington	31
McLennan, Donald F., No. Cuba..Alg.	25
McLennan, P. B., Syracuse..Onondaga	20
McManus, M. J., Edmeston.....Otsego	7
McMartin, Alfred, Rensselaer Falls, St. Lawrence	10
McMichael, John, Scotia...Schenectady	5
McMillan, S., Howe Cave....Schoharie	8
McMindes, Meritt, Troupsburg....Stu.	22
McMullen, John, Unionville....Orange	†42
McMurray, Albert, Gansevoort.....Sar.	17
McMurray, Henry A., Gansevoort..Sar.	1
McMurray, Robt. C., Gansevoort...Sar.	2
McNeil, George T., Theresa...Jefferson	60
McNeil, James F., De Ruyter....Mad.	21
McNeil, John C., Philadelphia.....Jef.	22
Macomber, George L., Greene....Chn.	†4
McPhilmy, Flora Anna, Port Leyden, Lewis	23
McQueen, Herbert S., Liverpool...Ono.	1
McSpadden, John, Niagara Falls...Nia.	2
McWharf, B. D., Waterloo......Seneca	2
Maffett, Robert, Walton......Delaware	1
Magee, B. B., Camden.........Oneida	1

† Including pure-bred, not registered.

Mahaffy, D. A., Argyle....Washington	2
Mahaffy, George, Salem....Washington	30
Maher, Jed, & Sons, Copenhagen.Lewis	6
Maher, John, Newburg ....Orange	6
Mahofski, Jaht, Saratoga Spa.....Sar.	3
Mahoney, John, No. Stockholm..St. L.	2
Maider, H. W., Clay........Onondaga	1
Maine, Charles, W. Edmeston...Otsego	6
Malley, Thos., Montgomery.....Orange	5
Mallory, J. H., Horseheads...Chemung	3
Mallory, Morris J., Oaksville...Otsego	†2
Maloney, Thomas, Whitney Point..Brm.	4
Manley, Glen G., Conewango Valley, Cattaraugus	1
Manley, W. J., Little Valley......Cat.	27
Mann, H. W., Hamilton......Madison	9
Mann, Mrs. J. E., Clymer..Chautauqua	12
Manning, Albert, Otisville......Orange	30
Manning, Fred, Smithboro.......Tioga	45
Many, John, Whitesboro........Oneida	35
Many, P. M., Livingston Manor...Sul.	7
Mapes, Mrs. G. H., Chester....Orange	1
Mapes, I. T., Middletown......Orange	12
Marble, Mrs. E. L., Chenango Forks, Broome	2
March, C. H., Munnsville.....Madison	12
March, Henry, Morrisville.....Madison	10
Mark, John, Cortland........Cortland	8
Markham & Puffer, Avon....Livingston	18
Markham, DeWitt C., Port Leyden, Lewis	11
Markham, Dr. F. D., Port Leyden..Lws.	13
Marriott, F. A., Clayville....Herkimer	4
Marsh, D. Smith, No. Brookfield..Mad.	1
Marshall, Clark H., Gouverneur..St. L.	2
Marshall, Edw. H., Ithaca...Tompkins	32
Marshall, E. W., Essex.........Essex	7
Martin, C. H., Cherry Creek......Cha.	1
Martin, D. E., Delevan....Cattaraugus	20
Martin, Frank F., Lisbon.......St. L.	1
Martin, H. A., Georgetown....Madison	6
Martin, Jay C., Lisbon...St. Lawrence	2
Martin, Prescott H., Caneadea....Alg.	10
Martin, W. P., & Son, Delevan....Cat.	21
Martyn, A. T., Canton...St. Lawrence	3
Marvin, F. R., New Berlin...Chenango	20
Mason, Cyrus E., No. Brookfield..Mad.	2
Mather's Sons, S., Adams....Jefferson	82
Mathias, Henry, Jerusalem.....Albany	†5
Matson & Holland, Holley.....Orleans	18
Matteawan State Hospital, Fishkill-on-Hudson ....Dutchess	24
Mattersen & Harris, Hamilton....Mad.	1
Matteson, Mrs. Jennie A., W. Exeter, Otsego	1
Matteson, W. A., Utica........Oneida	60
Matteson, W. E., & Son, Pierrepont Manor ....Jefferson	70
Mattice, Paul B., Middleburg.....Sco.	30
Matty, C. H. & F. G., Copenhagen..Lws.	4
Matty, H. D., Copenhagen.......Lewis	11
Maurice, Robert L., Barneveld..Oneida	12
Maxson, A. L., Little Genesee.....Alg.	5
Maxwell, A. G., Canastota....Madison	1
Maxwell, Henry C. G., Coila......Was.	1
Maxwell, J. P., W. Edmeston...Otsego	21
Maxwell, John R., Franklinville...Cat.	5
Maxwell, Raymond J., Greenwich..Was.	5
Maynard, A. C., Stamford...Delaware	4
Maynard, W. J., Smyrna....Chenango	7
Mayne, Charles A., Burlington Flats, Otsego	12
Mayne, George, Burlington Flats..Ots.	4
Mayne, H. F., Burlington Flats...Ots.	32
Mead, B. E., Lacona..........Oswego	35
Mead, E. L., Canastota.......Madison	4
Meade, Morris P., So. Amenia....Dut.	4
Meade, Willis S., Clyde........Wayne	4
Mear, W. E., Marcellus......Onondaga	1
Mecklenburg, Chris., Sinclairville..Cha.	2
Meddaugh, P. C., Candor.......Tioga	6

Medlong, H. A., & Son, Oswego.Oswego	13
Meeder, L. H., Westfield...Chautauqua	1
Meiklejohn, G. W., Putnam......Was.	1
Mellen, F. G., Richville...St. Lawrence	4
Melvin & Godfrey, Baldwinsville..Ono.	60
Melvin, R. C., Liverpool.....Onondaga	50
Mendell, Mrs. Frank, Pierrepont Manor, Jefferson	1
Merchant, B. F., Georgetown.....Chn.	1
Merihew, Elmer T., Marathon.....Cor.	2
Merrill, G. L., Albion..........Orleans	8
Merrill, Irving, So. Dayton.......Cat.	3
Merrill, Lee L., So. Dayton.......Cat.	6
Merrill, R. Edwin, Sherburne.....Chn.	1
Merritt & Seely, W. Eaton....Madison	7
Merritt, Jacob V., Kingston.....Ulster	1
Merritt, M. A., Perryville.....Madison	4
Merry, Eugene, Derby............Erie	5
Merry, Eugene, Derby............Erie	*1
Mertz, George J., Palmyra.....Wayne	8
Merwin, Geo. W., Kinderhook.....Col.	†20
Merz, Frank, Jamestown..Chautauqua	4
Meservey, F. A., Ogdensburg....St. L.	1
Mesick, Jacob P., Hudson....Columbia	2
Mespell, Wm. P., Dryden....Tompkins	8
Metcalf, D. G., & Son, Augusta..Oneida	2
Meyer, Henry E., Middletown..Orange	6
Meyer, Henry von L., Suffern....Roc.	3
Meyer, Mrs. Laura Mayhew, Marcy, Oneida	40
Mickel, LeRay, Cobleskill....Schoharie	2
Middlemast, W. J., Cazenovia..Madison	7
Middleton, D. C., Black River.....Jef.	7
Mighells, Elliott C., Randolph.....Cat.	5
Miles, A. B., Philadelphia....Jefferson	†17
Miles, J. B., Smyrna........Chenango	1
Miller, Alton, Fort Plain........Mtg.	40
Miller, A. W., Bemus Point......Cha.	8
Miller, Curtis, Deansboro.......Oneida	42
Miller, D. H., Adams........Jefferson	10
Miller, Edward H., Owego......Tioga	10
Miller, F. A., Earlville.......Madison	14
Miller, F. W., Holland...........Erie	†12
Miller, George, Slate Hill......Orange	6
Miller, Gerrit S., Peterboro...Madison	28
Miller, Harry, Sherman....Chautauqua	1
Miller, H. A., Morris..........Otsego	6
Miller, Jacob F., Amsterdam.....Mtg.	25
Miller, J. G., Bloomingburg...Sullivan	†7
Miller, Max, Herkimer.......Herkimer	44
Miller, S. N., E. Randolph........Cat.	3
Miller, William, Pine Bush.....Orange	3
Miller, William P., Holland Patent, Oneida	8
Miller, W. T., Sidney........Delaware	7
Milliman, George, Geneseo..Livingston	1
Millis, Jay J., Leonardsville...Madison	1
Mills, A. R., Portageville.....Wyoming	13
Millspaw, Frank M., Ellington....Cha.	7
Millspaw, Seth, Ellington ....Cha.	1
Milspaw, G. W., Conewango Valley, Cattaraugus	†20
Minekime, C. M., No. Collins.....Erie	1
Miner & Whitford, Hamilton..Madison	2
Miner, Ira E., Shavertown...Delaware	3
Miner, Paris C., Cooperstown...Otsego	8
Miner, W. H., Chazy..........Clinton	28
Minges, Owen D., Wellsville..Allegany	8
Minturn, W. Q., Warwick......Orange	1
Mitchell, E. C., Sodus.........Wayne	6
Mitchell, F. S., DeRuyter....Madison	40
Mitchell, J. Barnabas, Remsen..Oneida	8
Mitchell, L., Pulaski..........Oswego	10
Moffat, S. L., & Son, Washingtonville, Orange	24
Moffat, Warren H., Washingtonville, Orange	24
Moffitt, John K., Plattsburg....Clinton	30
Moncrief, George M., Hammond..St. L.	1
Monroe, R. A., E. Guilford...Chenango	10
Montayne, Jay, Sprakers..Montgomery	2

† Including pure-bred, not registered. * Part ownership.

Montfort, John P., Hopewell Junction Dutchess	8
Montrose, E. D., Ellenville.....Ulster	2
Moody, H. A., 280 Broadway, New York ....New York	1
Moon, C. E. & H. A., Canastota..Mad.	7
Moore, A. H., Moores Mills..Dutchess	30
Moore, A. J., Beaver Dams..Schuyler	3
Moore, Edmund P., Divine Corners.Sul.	38
Moore, James A., Cazenovia.......Ono.	3
Moore, Wm. D., Elizaville...Columbia	†3
Moot, Frank P., Munnsville..Madison	8
Moot, J. Arthur, Lincklaen..Chenango	11
Moran, A. J., Hartwick........Otsego	4
Moran, Edward T., Hamilton..Madison	13
More, J. A., Hammond..St. Lawrence	1
More, John D., Brier Hill.......St. L.	4
More, Lewis C., Beerston....Delaware	1
Morehouse, A. F., Fulton......Oswego	3
Morey, E. A., Candor ....Tioga	1
Morey, John G., Middleville..Herkimer	6
Morgan, George H., New Woodstock Madison	2
Morison, Robert E., Little Britain..Ora.	3
Morris, Elmer C., Alpine....Schuyler	10
Morris, J. C., Hamilton......Madison	17
Morris, R. W., Morrisville....Madison	3
Morrisey, George R., Walden..Orange	15
Morrissey, L. D., Walden.....Orange	25
Morrissey, Martha J., Walden..Orange	4
Morrison, B., Rensselaer Falls...St. L.	12
Morse, A. J., Halcott.........Greene	6
Morse, Frank G., Moravia.....Cayuga	1
Morse, H. M., Franklinville......Cat.	2
Morse, John S., Chenango Forks.Brm.	8
Morton, Chas., Almond......Allegany	31
Morton, Frank, Angelica ....Allegany	20
Morton, L. P., Rhinecliff.....Dutchess	1
Mortz, J. L., Mohawk.......Herkimer	1
Mor-Van Farms, Eaton......Madison	1
Moser, Christian, Groghan......Lewis	2
Moser, Philip, Groghan ....Lewis	1
Mosher, G. L., Little Falls...Herkimer	25
Mosher, L. J., St. Johnsville.....Mtg.	26
Mosher, L. W., Lebanon......Madison	4
Mott, C. A., Dryden.........Tompkins	5
Mott, Elbert H., Unadilla Forks..Otsego	2
Mott, Fred J., Meridian.......Cayuga	2
Mott, Otis D., Hartwick.......Otsego	2
Mould, Wm. J., Montgomery....Orange	3
Mount, O. E., Ardonia.........Ulster	2
Mowers, Irving W., Worcester...Otsego	1
Moyer, D. C., Liverpool.....Onondaga	9
Mudge Bros., E. Freetown.....Cortland	4
Mullennix, A. L., New Paltz....Ulster	12
Mulligan, Wm., Buskirks Bridge..Was.	†3
Mulliner, A. D., Rocklet.......Orange	20
Munro, Edwin K., Camillus......Ono.	35
Munro, Frank, & Son, Jordan.....Ono.	3
Munsell, A. W., Attica.......Wyoming	2
Munsell, L. E., Attica.......Wyoming	†10
Murdock Bros., Crown Point.....Essex	1
Murdough, James T., Oramel..Allegany	4
Murphy, Geo. A., Jasper......Steuben	10
Murphy, Joseph, Rexville......Steuben	3
Murphy, Martin, East Creek.....Her.	2
Murray, Frank, W. Winfield..Herkimer	58
Murray, J. B., W. Winfield..Herkimer	2
Myer, Minard, W. Hurley,......Ulster	5
Myers, E. E., Conewango........Cat.	24
Myers, Grant H., Sherburne..Chenango	0
Myers, Harry E., Bernhards Bay..Osw.	1
Myers, J. H., New Hamburg..Dutchess	27
Myers, L. H., Conewango Valley..Cat.	23
Narita, Koichi, Westdale ......Oneida	1
Neale, Geo. A., & Son, Walton.....Del.	3
Neely, Reuben, Hammondsport....Stu.	6
Neidlinger, Fred, Bainbridge......Chn.	4
Nellis, Olin A., Evans Mills..Jefferson	1
Nelson, E. J., Little Falls....Herkimer	15
Nelson, George E., Franklinville..Cat.	1
Nelson, Nilo, Jamestown...Chautauqua	3
Nelson, S. B., New Berlin....Chenango	5
New, T. G., Canastota.........Madison	3
Newkirk, Cornelius, Dairyland...Ulster	7
Newman, Charles H., Sandusky...Cat.	6
Newman, Enos C., Webster Sta...Mad.	32
Newton, L. L., So. Otselic...Chenango	†10
Newton, Parker, Earlville.....Madison	18
Newton, W. H., Hudson Falls....Was.	4
Newton, W. J., Chittenango Sta..Mad.	1
Newton, W. W., Hamilton....Madison	2
New York State School of Agriculture, Morrisville ....Madison	7
Niagara University, Niagara University, Niagara	34
Nichols, E. E., & Son, Marcellus...Ono.	16
Nichols, Frank A., Edmeston...Otsego	11
Nichols, Frank A., Edmeston...Otsego	*1
Nichols, George S., Owego.......Tioga	11
Nichols, Harry D., Canaan...Columbia	10
Nichols, Jas. H., Carmel......Putnam	17
Nichols, Leo L., Bainbridge..Chenango	6
Nichols, Wm. C., Union Springs..Cay.	4
Nickerson, S. H., Canton..St. Lawrence	1
Nightengale, I. H., Massena Springs, St. Lawrence	1
Niles, Melvin H., Lebanon....Madison	5
Niver, Henry, Hillsdale......Columbia	5
Noble, Elmer, Morristown......St. L.	1
Noble, H. J., Mannsville.....Jefferson	12
Norman, A. J., Sinclairville......Cha.	4
North Family, Shakers, Mt. Lebanon, Columbia	1
Northrop Bros., Deerfield.......Oneida	2
Northrop, L. L., New Woodstock..Mad.	4
Norton, B. F., Canisteo.......Steuben	5
Norton, H. Edgar, Valley Falls...Ren.	1
Noteware, W. R., & Son, So. Apalachin, Tioga	2
Nottingham Bros., Syracuse......Ono.	29
Nye, J. G., Groton..........Tompkins	†10
Nye, M. S., Preble..........Cortland	65
Oakes, C. M., Earlville........Madison	3
Oaks, Ed., Angelica..........Allegany	10
Ober, Riley H., Ft. Jackson.....St. L.	1
Obern, John, Fly Summit........Was.	3
O'Brien, James, Ellicottville......Cat.	6
O'Connor, James C., Hornell...Steuben	20
O'Dell, F. J., Alfred Station......Alg.	8
Odell, L. H., Alfred Station......Alg.	21
Odell, W. A., Cortland.......Cortland	9
Odell, Wm. C., Almond.......Allegany	11
Ogden, Fred D., Middletown...Orange	7
Ogden, W. W., West Brook..Delaware	3
O'Hargan, Frank H., Rexville.....Stu.	2
O'Hargan, John, Rexville.........Stu.	5
Ohm Bros., Ava...............Oneida	1
Oliver, A. D., Waddington......St. L.	7
Olmstead, Henry C., Walton..Delaware	1
Olmsted, Albert, Hyndsville......Sco.	24
Olney, Mrs. Delia, So. Edmeston...Ots.	2
Oneida Community Limited, Kenwood, Madison	39
O'Neil, H. E., St. Regis Falls.....Fr.	4
Orr, H. L., Rockstream.........Yates	54
Orr, R. D., De Peyster...St. Lawrence	†1
Osborn, Menzo J., Memphis......Ono.	1
Osborne, A. R., Monroe........Orange	10
Osborne, G. L., & Son, Windsor...Brm.	11
Osborne, Wm. H. H., Le Roy.....Gen.	†2
Osterhout, Stanton, Cobleskill, R. D. 1 ....Schoharie	21
Ostrander, Frank S., Almond.....Alg.	25
Ostrander, George W., So. Wales..Erie	7
Ostrander, R. C., Canisteo.....Steuben	2
Ostrander, R. C., Knowlesville..Orleans	3
Ostrander, Wm. S., Schuylerville..Sar.	23
Overton, F. C. & K. A., Adams.....Jef.	100
Overton, Geo. F., Westtown....Orange	3
Owen, Allan R., Goshen.......Orange	50
Owen, Frank W., Turin........Lewis	20

† Including pure-bred, not registered. * Part ownership.

Owen, John, Estate, Boonville..Oneida	49
Owen, Ralph E., Fulton.......Oswego	1
Owen, Wm. H., Walden........Orange	1
Owens, Beecher W., W. Winfield..Her.	11
Owens, Joseph, Antwerp......Jefferson	10
Owens, Owen, Remsen, R. D. 2....Oni.	1
Owens, Robert B., Erieville...Madison	1
Paddock, Lewis S., Harrison Valley, Pa.	14
Padget, Dr. H. G., Tully....Onondaga	5
Padgett, Alexis, Owego.........Tioga	7
Padgett, Homer C., Oxford.......Chn.	1
Page, Delos, Almond.........Allegany	6
Page, T. A., & Son, W. Edweston..Ots.	51
Page, Tracy R., Groton.....Tompkins	2
Palmer Institute, Starkey Seminary, Lakemont ....Yates	3
Palmer, E. F., Oswego Falls...Oswego	1
Palmer, R. A., West Brook.......Del.	3
Palmer, Wm., Moscow......Livingston	1
Pangburn, F. A., Syracuse...Onondaga	27
Pangman, Jay, Whitehall..Washington	7
Pardee, Franklin J., Afton...Chenango	11
Paris, Frank L., Copenhagen....Lewis	13
Paris, W. W., Copenhagen.......Lewis	15
Parish, Welcome H., Oneonta...Otsego	5
Parke, J. B., Philadelphia....Jefferson	3
Parke, Lester A., So. Dayton.....Cat.	37
Parker, A. W., Munnsville....Madison	7
Parker, Chas. A., Rexville.....Steuben	9
Parker, Chas. H., Otselic....Chenango	6
Parker, Ellis T., Westfield.......Cha.	1
Parker, Geo. B., Varysburg......Wyo.	5
Parker, Harry, Edmeston.......Otsego	6
Parker, James S., Salem.........Was.	3
Parker, Ray W., Coventry...Chenango	2
Parker, S., & Son, DeRuyter......Mad.	11
Parker, Wm. R., Burlington Flats..Ots.	6
Parkhurst, F. V., Florida......Orange	5
Parks, Edward L., Spencer......Tioga	†4
Parks, Oscar E., Franklin....Delaware	7
Parsell, C. E., Auburn.........Cayuga	8
Parshall, E. U., Cooperstown...Otsego	5
Parshall, Fred, W. Danby....Tompkins	2
Parshall, Henry E., & Sons, Cooperstown ....Otsego	2
Parson, Wm., Rome, R. D. 81..Oneida	1
Parsons, A. E., Berkshire.......Tioga	5
Parsons, John R., Earlville....Madison	30
Parsons, Robert S., Binghamton..Brm.	13
Partridge, George H., Heuvelton..St. L.	1
Partridge, W. C., Pompey...Onondaga	†15
Paschen, August, Little Valley....Cat.	4
Patnode, Lemuel, Chazy......Clinton	3
Patrick, F. L., Verona Station....Oni.	1
Paul, W. J. & H. R., Adams..Jefferson	1
Payne, F. H., Berkshire.........Tioga	18
Pearsall, H. B., Trumansburg....Tom.	15
Pearson, Raymond A., Ithaca, R. D. 3, Tompkins	1
Pease, B. W., E. Windsor......Broome	3
Pease, John A., Oswego.......Oswego	5
Peck, Fred G., Deer River......Lewis	1
Peck, G. E., Poolville........Madison	1
Peck, H. G., Shushan.....Washington	4
Peck, J. P., Kirkville.......Onondaga	8
Peck, L. T., Jamesville......Onondaga	5
Peck, L. W., Cortland........Cortland	5
Peck, W. S., No. Norwich...Chenango	1
Peebles, Arthur, Carthage ....Jefferson	8
Peekham, S. W., Solsville.....Madison	†1
Peenstra, Geo. R., Vernon Center..Oni.	1
Peenstra, John R., Vernon Center..Oni.	5
Peet, Edwin G., Morris.........Otsego	3
Pelsue, Geo. L., No. Stockholm..St. L.	12
Pelton, Floyd I., Monticello...Sullivan	1
Pelton, J. H., Monticello.....Sullivan	5
Pelton, John L., Monticello...Sullivan	12
Pembleton, John G., Tioga Center.Tio.	25
Pendergast, S. C., Phoenix...Onondaga	80
Pendergast, S. W., Phoenix....Oswego	8
Penney, B. M., Adams, R. D. 4....Jef.	1
Pepper, Lewis F., Amsterdam....Mtg.	1
Perkins, Charles H., Poughkeepsie..Dut.	8
Perkins, H., & Son, Red Creek..Wayne	35
Perkins, Joel, Cattaraugus........Cat.	†21
Perkins, Judson O., Cazenovia....Mad.	11
Perkins, M. K., So. Otselic...Chenango	13
Per Lee, Fred J., McLean....Tompkins	30
Perry, Harvey, Hammond.......St. L.	†9
Perry, J. J., Antwerp........Jefferson	10
Perry, L. C., Wellsville......Allegany	5
Personius, Myron, Freeville, R. D..Tom.	1
Peters, Ralph, Wading River...Suffolk	1
Peterson, C. E., Jamestown......Cha.	2
Petrie, Charles, Evans Mills..Jefferson	1
Petrie, F. W., DeKalb Junction..St. L.	4
Petrie, Wm., Pulaski..........Oswego	9
Petteys, James, Greenwich.......Was.	4
Petzold, C. E. & H. W., Owego, R. D. 3, Tioga	3
Pfeil, Henry, Guilford.......Chenango	6
Phalen, Wm., Marathon......Cortland	10
Phelan, James, Forestville........Cha.	51
Phelps, John H., Vernon......Oneida	40
Phelps, John L., Solsville.....Madison	32
Phetteplace, M. Delancy, Norwich..Chn.	4
Philley, C. A., Afton........Chenango	9
Phillippi, Wm., Chaffee ....Erie	†14
Phillips, C. B., Ellicottville.......Cat.	†5
Phillips, Ira, Canastota......Madison	5
Phillips, Job, Fabius........Onondaga	15
Phillips, J. E., Cuba.........Allegany	2
Phillips, Meric, Fair Haven...Cayuga	1
Phillips, W. H., E. Chatham..Columbia	5
Phillpott, Edgar, Hoosick Falls...Ren.	3
Philpot, Ernest C., Morrisville...Mad.	1
Phinney, Scott E., Wadhams....Essex	3
Pickard, H. L., Canastota....Madison	35
Pierce, Albert, Greenwich..Washington	2
Pierce, Allen A., Middleport...Niagara	1
Pierce, Charles A., Alfred Station..Alg.	5
Pierce, E. N., Cuba..........Allegany	†10
Pierce, M. H., Gouverneur......St. L.	6
Pierce, R. E., Cuba..........Allegany	2
Pierce, Z. S., Marathon......Cortland	2
Piercy, J. H., DeKalb Jct.......St. L.	3
Piersma Bros., Oriskany.......Oneida	7
Piester, Chas. J., Ancram....Columbia	11
Pike, Arthur G., Avon.....Livingston	1
Pike, Albert M., Canton.........St. L.	5
Pike, H. J., Norwich........Chenango	2
Pinckney, Fred I., R. D. 5, Syracuse Onondaga	3
Pine, Benton L., Hoosick Falls...Ren.	1
Pine, Frank, Tiashoke......Rensselaer	1
Pinkerton, Wm. J., Ogdensburg..St. L.	1
Pinney, C. S., W. Stockholm....St. L.	5
Pitcher, A. K., Maine.........Broome	5
Pixley, J. E., E. Windsor......Broome	1
Place, Edward L., Caledonia......Liv.	18
Plumb, H. F., No. Bangor....Franklin	11
Plummer, G. H., Constableville..Lewis	3
Pohl, E. L., Watertown......Jefferson	32
Pohl, Lewis C., Redfield.......Oswego	8
Pohl, Peter, Watertown......Jefferson	26
Pohl, Valentine F., Ava........Oneida	39
Polhamus, Maurice, Aurora....Cayuga	1
Pollard, B. C., Marathon.....Cortland	1
Pomeroy, Chas. A., Sidney Center..Del.	3
Pool, Irvin, Conewango Valley....Cat.	6
Pool, Mrs. John, & Merton L., Herman, St. Lawrence	†5
Poole, E. E., Lincklaen Center...Chn.	28
Poole, S. L., Lincklaen Center...Chn.	24
Pope, Chester, Edmeston.......Otsego	5
Pope, D. L., New Berlin....Chenango	18
Porteous, Leslie S., Lisbon......St. L.	3
Porter, A., Portlandville.......Otsego	11
Porter, Ray A., Cuyler......Cortland	5
Post, H., Norwich, R. D. 3...Chenango	4
Potter, Albert M., Troupsburg....Stu.	1
Potter, A. S., Almond.......Allegany	18

† Including pure-bred, not registered.

Potter, Frank D., Oneonta.....Otsego	15
Potter, H. H., Oneonta, R. D. 2..Ots.	3
Potter, James, Cassville ....Oneida	50
Porter, Leon J., Oneonta.......Otsego	16
Potter, O. A., Andover.......Allegany	7
Potter, S. G., Berkshire........Tioga	1
Potter, S. M., Holland Patent..Oneida	1
Potter, Wilbur D., Walton...Delaware	8
Potter, W. J., Andover, R. D. 2..Alg.	1
Potter, W. O., Pierrepont......St. L.	12
Powell, D. F., & Son, Holland Patent Oneida	13
Powell, E. A., Syracuse.....Onondaga	175
Powell, E. H., Plymouth....Chenango	35
Powell, H. A., DeKalb Junction..St. L.	2
Powell, P. M., Union.........Broome	1
Powell, Stephen A., Essex......Essex	7
Pratt, A. B., Harpersville...Chenango	7
Pratt, Charles, Dryden .....Tompkins	2
Pratt, Chas., Estate, Glen Cove..Nas.	14
Pratt, Frank P., Greenwich......Was.	1
Pratt, Samuel F., Alden.........Erie	21
Preece, James, Canastota.....Madison	6
Prescott, H. A., Lacona.......Oswego	15
Prescott, M. S., Lacona.......Oswego	3
Preston & Mingus, Andover...Allegany	5
Preston, Geo., Sodus ....Wayne	1
Preston, W. H., Springwater......Liv.	1
Price, Ashley, Livonia ....Livingston	13
Price, Frank E., Cortland....Cortland	12
Price, P. H., So. Otselic.....Chenango	9
Price, Thomas, Lebanon......Madison	7
Pringle, Benjamin, Mayville......Cha.	18
Prior, L. R., Clayville.........Oneida	2
Prosser, Mrs. Arlie, Little Genesee.Alg.	12
Pudney, Frank E., Sherburne....Chn.	9
Pudney, Walter E., Harpersville..Brm.	3
Pugh, W. E., Holland Patent...Oneida	2
Pulis, Myron J., Warwick.....Orange	7
Pulver, W. J., Millerton.....Dutchess	4
Pulver, W. W., Pine Plains..Dutchess	10
Purcell, James & Wm., Carthage...Jef.	10
Purdy, L. E., Sherburne.....Chenango	2
Purington, Mrs. Elizabeth F., Madison Madison	30
Purvis, A. W., Dryden......Tompkins	3
Putman, Wm. H., Cazenovia.....Mad.	4
Quackenbush, J. E., Valley Mills..Mad.	23
Quackenbush, Melvin, Tiashoke...Ren.	1
Quick, Wm. B., Ithaca......Tompkins	1
Race, Geo. T., Greene.......Chenango	1
Race, Geo. W., Middle Granville..Was.	†12
Rainbow, Samuel, Cuyler....Cortland	8
Ramsdell, J. T., No. Brookfield...Mad.	28
Randall, C. M., Gouverneur.....St. L.	9
Randall, J. S., Avoca........Steuben	12
Randolph, Alva F., Alfred....Allegany	10
Ranger, Fred., Arkport.......Steuben	6
Ranney, J. A., Cortland......Cortland	14
Rapalje, Thos., Walden........Orange	4
Rasey, George G., Randolph......Cat.	22
Rathbun, F. G., Verona........Oneida	9
Raubett, W. H., So. Dayton......Cat.	6
Raymer, Fred C., Sodus.......Wayne	4
Raymond, Isaac B., Rockstream..Yates	2
Rea, Chas. D., W. Chazy......Clinton	†28
Read Bros., Poland.........Herkimer	28
Reagan Bros., Tully........Onondaga	10
Reagan, E. D., Messengerville.Cortland	4
Record, Chas. K., Peterboro.....Mad.	36
Record, Geo. S., Sherburne..Chenango	3
Reding, Jay N., Morrisville...Madison	2
Redman, John, Merrifield......Cayuga	9
Redmond, Rev. Daniel, Avoca..Steuben	3
Reed, E. N., Cortland........Cortland	10
Reed, J. D., Richfield Springs..Otsego	7
Reed, Roy W., Hemlock....Livingston	3
Reeves, R. Newell, E. Palmyra..Wayne	2
Rehler, A., & Sons, Allegany......Cat.	1
Reid, Wm. J., Argyle, R. D. 2...Was.	1
Remington, H. F., Rochester...Monroe	4
Rexford, O. M., Watertown..Jefferson	†15
Rexford, T. D., Bemus Point.....Cha.	15
Reynolds, C. F., Jasper.......Steuben	†17
Reynolds, Edsall B., Sherburne...Chn	21
Reynolds, G. C., Belmont....Allegany	5
Reynolds, George H., So. Hammond St. Lawrence	1
Reynolds, Herbert, Kennedy......Cha.	3
Reynolds, Jas. A., Troy..........Ren.	†2
Reynolds, R. D., Lacona.......Oswego	3
Reynolds, Wesley, Rexville ....Steuben	3
Rice, B. J., Friendship.......Allegany	6
Rice, Edward C., Fairfield...Herkimer	4
Rice, Judson, E. Sodus.........Wayne	1
Rice, L. C., & Son, Lowville.....Lewis	16
Rich, E. C., Richville....St. Lawrence	†8
Rich, Geo. G., Valley Falls..Rensselaer	2
Rich, Harvey L., Shushan.......Was.	15
Richards, Robert J., W. Winfield..Her.	1
Richardson, Chas. A., Hammond..St. L.	20
Richardson, Edgar J., Killawog..Brm.	4
Richardson, John H., Wolcott..Wayne	6
Richardson, S. H., Gouverneur..St. L.	5
Richer, Dewitt, Mariposa....Chenango	14
Richmond, E. P., Solsville....Madison	†1
Richtmyer, Rufus, Fultonville.....Mtg.	5
Rickard, Hager, Cobleskill...Schoharie	12
Ricker, Geo. W., Ashville..Chautauqua	†5
Rickett, B. E., Three Mile Bay...Jef.	8
Riddlesdin, Wm. J., Addison..Steuben	3
Rider, N. B., Oxford Depot....Orange	†1
Rifenburgh, Clifford E., Germantown Columbia	1
Rigby, J. W., Troupsburg.....Steuben	7
Riggs, Frank, Potsdam.........St. L.	1
Riggs, L. C., Franklinville........Cat.	2
Righter, John, Pine Plains...Dutchess	10
Righter, J. Walter, Pine Plains..Dut.	13
Riker, Wm. H., Spencer........Tioga	6
Rindge, E. C., Cortland......Cortland	52
Rinkle, Oliver, Remsen........Oneida	4
Risley, E. E., Walton.......Delaware	78
Risley, Henry D., Earlville....Madison	40
Ritchie, John A., Potsdam......St. L.	31
Rivenburg, S. R., Malden Bridge..Col.	4
Robbins, A. A., Smithville...Jefferson	8
Robbins, G. S., Adams.......Jefferson	5
Robbins, Harry P., Southampton..Suf.	3
Robens, W. D., Poland......Herkimer	125
Roberson, Albert H., Shushan...Was.	1
Roberts, D. E., & Sons, Bliss.....Wyo.	5
Roberts, Edward, & Sons, Clinton..Oni.	1
Roberts, G. M., Barneveld......Oneida	3
Roberts, Glenn S., Copenhagen..Lewis	5
Roberts, R. Wilson, Waterville..Oneida	1
Robertson, Andrew W., Cambridge, R. D. 2. ....Washington	6
Robertson, F. C., Lounsberry....Tioga	1
Robertson, Roderick, Howells...Orange	†22
Robinson, C. A., Andover....Allegany	4
Robinson, C. D., Friendship..Allegany	9
Robinson, E. J., Auburn.......Cayuga	5
Robinson, E. S., Forestville......Cha.	26
Robinson, Garrett, Richfield Springs Otsego	3
Robinson, Gustave A., Richfield Springs, Otsego	17
Robinson, G. B., Portville........Cat.	20
Robinson, G. G., Sherburne..Chenango	14
Robinson, Gilbert S., Addison..Steuben	6
Robinson, H. A., So. New Berlin..Chn.	30
Robinson, Irving D., W. Winfield..Her.	13
Robinson, J. G., & Co., Richfield Springs ....Otsego	9
Robinson, J. R., Owego, R. D. 2..Tio.	16
Robinson, Robt., Bath........Steuben	6
Robinson, Sidney, Malone....Franklin	1
Robinson, Thos. W., Bath....Steuben	8
Robinson, V. D., Edmeston.....Otsego	50
Robinson, W. C., Pike.......Wyoming	1
Robotham, Geo. W., Canastota....Mad.	16
Robson, Alex., Lisbon..........St. L.	1

† Including pure-bred, not registered.

Rockwell, John S., Burlington Flats, Otsego	30
Rockwood, Geo. E., Bombay..Franklin	6
Rodgar, Murray J., Hammond..St. L.	40
Rodger, D. G., Hammond.......St. L.	20
Rodwell, J. H., Albion........Orleans	11
Roe, Charles S., Oxford.....Chenango	2
Roe, J. K., Florida...........Orange	3
Rofinot Bros., Lowville.........Lewis	2
Rogers Bros., Hannibal.......Oswego	2
Rogers, Alfred A., Salem........Was.	7
Rogers, Mrs. Anna K., Ex., Cape Vincent ....Jefferson	1
Rogers, Austin Leonard, Chaumont.Jef.	6
Rogers, Charles B., Clinton....Oneida	..
Rogers, C. F., Friendship....Allegany	3
Rogers, G. C. & H. H., Edmeston..Ots.	11
Rogers, Geo. H., Oxford.....Chenango	3
Rogers, Geo. W., & Son, Hannibal.Osw.	7
Rogers, G. W., Adams, R. D......Jef.	†1
Rogers, Jeremiah, & Sons, Whitesville. Allegany	5
Rogers, John D., Canisteo.......Steuben	8
Rogers, R. W. E., Cape Vincent....Jef.	1
Rogers, William, Schuylerville.....Sar.	1
Rolfe, James, Kirkville.......Madison	†1
Rollins, D. M., Whitesville....Allegany	18
Rollins, Peter, Canisteo.......Steuben	4
Rollins, William, Greenwood...Steuben	32
Ronas, Frank L., Philadelphia.....Jef.	14
Rood, Harris D., Edmeston.....Otsego	8
Roop, Marcus J., Middletown...Orange	4
Roos, Elbert, Walden..........Orange	15
Roos, Richard, Wallkill.........Ulster	3
Root, Wm. W., Preble..........Cortland	6
Rose, A. J. & E. P., W. Winfield..Her.	16
Rose, Chauncey, Cazenovia....Madison	11
Rose, Chas. O., Hornell........Steuben	2
Rose, Geo. W., Portlandville....Otsego	1
Rose, O. D., W. Winfield.....Herkimer	†2
Rose, Roy W., Adams........Jefferson	1
Rose, Walter C., Geneva.......Ontario	5
Roseboom, Chas. S., Westford...Otsego	1
Rosebush, Geo. W., Alfred....Allegany	1
Rosegrant, C. A., Ogdensburg....St. L.	7
Rosenbloom, Moses, Syracuse....Onon.	32
Ross, D. J., Hubbardsville....Madison	9
Ross, F. D., Corfu............Genesee	7
Ross, Joseph, Rensselaer Falls...St. L.	20
Rossman Bros., Martindale...Columbia	4
Rothemyer, Wm., Amsterdam.....Mtg.	1
Roulet, F., Newark Valley.......Tioga	5
Rounds, Geo. W., Mannsville......Jef.	†7
Rouse, Frank, Marcellus....Onondaga	12
Rowe, L. F., Otego, R. D. 3....Otsego	9
Rowell, A. W., Franklin.....Delaware	1
Rowell, Ernest G., Evans Mills....Jef.	3
Rowland, Myron O., Syracuse.....Ono.	†4
Rowley Bros., Cuba..........Allegany	19
Rowley & Hefferman, Fabius......Ono.	2
Rowley, Arby, Cuba..........Allegany	9
Rowley, Ellsworth, Cuba, R. D. 2..Alg.	20
Royce, Chas. H., Ithaca.....Tompkins	1
Royce, C. M., Berkshire.........Tioga	11
Royce, F. W., Berkshire.........Tioga	†17
Roys, Jay W., Oxford.......Chenango	1
Rumsey, Guy L., Fulton, R. D. 7..Osw.	19
Rumsey, W. Y., Goshen.........Orange	2
Rushmore, Chas. F., Athens....Greene	4
Russell, Ernest B., Poland...Herkimer	1
Russell, H. A., Bombay.......Franklin	5
Russell, H. G., Nichols..........Tioga	8
Russell, John A., Poland.....Herkimer	30
Russell, John H., Morristown....St. L.	9
Russell, Lewis, Hamilton......Madison	12
Russell, Ulysses G., Nichols.....Tioga	6
Rutan, E. C., Unionville.......Orange	1
Rutherford, H. F., Walton...Delaware	6
Rutherford, R. G., Hammond.....St. L.	24
Rutishauser, Jacob, Canajoharie...Mtg.	8
Ruttan, Geo. A., Dexter......Jefferson	10
Sabin, Alfred C., Sherburne......Chn.	7
Sabin, W. B., & Priscott, H.S., Plymouth ....Chenango	1
Sabin, W. P., Spencer..........Tioga	35
Sabine, Austin M., Lebanon, R. D., Madison	†7
Sage, P. H., Copenhagen........Lewis	6
Sagendorf, C. W., Sidney Center..Del.	5
Sager, Charles, Waverly.........Tioga	†5
Sahler, M. J., Pataukunk.......Ulster	7
St. John, H. M., Canajoharie.....Mtg.	1
St. John, M., Lyndonville......Orleans	1
St. John, W., Medusa..........Albany	1
Salisbury, C. E., Philadelphia.....Jef.	†5
Salisbury, Geo. F., Poland...Herkimer	8
Salm, John A., Vernon Center...Oneida	1
Salmon, N. W., Glenfield........Lewis	33
Salsbury, L. E. & J., Pennellville..Osw.	1
Samson, Henry W., West Branch..Oni.	4
Sanborn, George W., Utica......Oneida	10
Sanderson, J. D., Pulaski......Oswego	21
Sanford, Edward B., Warwick....Ora.	60
Sargent, A. James, Waterport..Orleans	9
Sargent, Ernest A., So. New Berlin, Chenango	7
Sargent, Geo. H., Burke......Franklin	5
Saunders, F. E., Lincklaen Center..Chn.	24
Saunders, F. P. & Son, Cortland..Cor.	25
Savage, S. N., Troupsburg....Steuben	3
Sawyer, Charles A., Friendship....Alg.	6
Sawyer, L. N., Big Flats.....Chemung	1
Scheidleman, H. J., Boonville..Oneida	60
Scheidleman, H. J., Central Square, Oswego	18
Schell Bros., Orleans Four Corners..Jef.	1
Schenck, J. E., Jasper........Steuben	15
Schermerhorn, A. F., Kennedy....Cha.	2
Schermerhorn, H. D., So. Hammond, St. Lawrence	1
Schmid, Julius, Montgomery...Orange	74
Schoonmaker, Daniel E., Accord...Uls.	5
Schoonmaker, E. D., Canajoharie..Mtg.	14
Schoonmaker, Ervin J., Kyserike...Uls.	25
Schoonmaker, John M., Accord..Ulster	7
Schoonmaker, Selah, Gardiner...Ulster	15
Schuman, Paul, Walden........Orange	4
Schuppenhauer, Henry, Little Valley, Cattaraugus	4
Schuyler, Chas. J., Amsterdam...Mtg.	12
Schuyler, James E., Cobleskill....Sco.	15
Schuyler, P. Jay, & Son, Camillus.Ono.	6
Schuyler, Wm. G., Amsterdam....Mtg.	27
Schwarz, Gottlieb, Wallkill.....Ulster	3
Scobie, Andrew D., Walton...Delaware	11
Scott, E. B., Bridgewater.....Madison	12
Scott, Frank E., Hubbardsville...Mad.	†10
Scott, G. F., Bridgewater......Oneida	15
Scott, Harvey W., Hamlet.......Cha.	3
Scott, J. H., Auburn..........Cayuga	1
Scott, Northrup B., Blossvale...Oneida	4
Scoville Bros., Varysburg....Wyoming	5
Seacord, W. H., Campbell Hall....Ora.	21
Seager, D. H., Kennedy....Chautauqua	3
Seager, Frank L., Randolph.......Cat.	4
Seaman, Eugene, Ballston Spa....Sar.	1
Seaman, Leslie W., DeKalb Junction, St. Lawrence	3
Seamans, Chas. G., E. Pembroke..Gen.	1
Searl, E. J., Lowville...........Lewis	11
Sears, H. S., Putnam Station....Was.	2
Seberry, R. B., Black Creek.......Alg.	27
Secor, B. D., Delmar..........Albany	1
Secor, Chas. H., Mountainville....Ora.	10
Seeber Bros., Hastings........Oswego	8
Seeley, R. Fenton, Waterloo....Seneca	15
Seely, H. D., Goshen..........Orange	50
Seely, Webb, Walton, R. D. 3....Del.	1
Seely, W. S., Walton, R. D. 3.....Del.	1
Seelye, M. S., Burnt Hills....Saratoga	32
Selleck, W. R., Huntington.....Suffolk	55
Sembke, Fred W., Lyons.......Wayne	9

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† Including pure-bred, not registered.

Sengstacken, George, Centerville Station .Sullivan	7
Sergeant, Ansel, Morris........Otsego	5
Severance, Geo. L., Cortland.....Cor.	7
Severance, Glen W., Gouverneur..St. L.	4
Sevier, Caleb, Marcellus.....Onondaga	12
Sexton, H. N., Earlville......Madison	21
Sexton, H. R., Sherburne....Chenango	40
Sexton, W. H., Smyrna......Chenango	26
Seymour, F. D., Lebanon.....Madison	25
Seymour, Gaius B., Whitney Point, Broome	11
Seymour, Dr. R. A., Whitney Point, Broome	2
Seymour, Thomas, DeKalb Jct....St. L.	25
Shapley, S. L., So. Otselic...Chenango	7
Shapley, W. A., Hamilton.....Madison	7
Shappee, E. B., Horseheads...Chemung	1
Shattuck, Virner W., Fulton...Oswego	21
Shaver, W. J., Jr., Freeville......Tom.	2
Shaw, C. B. & J., Rocklet......Orange	6
Shaw, J. R., DeLancey.......Delaware	7
Shay, David, Canastota.......Madison	2
Sheehan, M. W., Hudson Falls...Was.	3
Sheeley, Henry V., Pine Bush..Orange	10
Sheldon, Albro W., Wingdale.....Dut.	2
Sheldon, Earl, Copenhagen......Lewis	13
Sheldon, I. L., Ellenburg Depot...Cli.	32
Sheldon, Wilson B., Wingdale.....Dut.	4
Sheldon, W. P., Hamilton.....Madison	7
Shelton, A. L., Guilford.....Chenango	25
Shelton, Thomas, Poolville....Madison	3
Shepardson, W. A., Norwich..Chenango	17
Sheppard, Geo. H., Heuvelton....St. L.	5
Sherman, C. H., & Floyd Coats, So. Granby . . . . .Oswego	2
Sherman, Erie M., Pine City....Chm.	1
Sherman, Frank, Copake.....Columbia	24
Sherman, H. P., & Son, Tiashoke..Ren.	8
Sherman, Ira L., So. Otselic......Chn.	4
Sherman, Wesley E., Tiashoke....Ren.	3
Sherwood, C. M., Brewster....Putnam	2
Shevalier, N. L., Cortland....Cortland	7
Shields, C. W., Potsdam........St. L.	5
Shields, M. F. & Mrs. C. F., Ogdensburg . . . . .St. Lawrence	1
Shiels, J. E., Morristown........St. L.	6
Shillin, W. W., Brisben......Chenango	5
Shoemaker, Floyd R., Canastota..Mad.	5
Shoemaker, R. A., Canastota.....Mad.	2
Sholes, Floyd, New Berlin...Chenango	10
Short, Fred G., Morrisville....Madison	6
Short, Wm., Canajoharie, R. D. 1..Mtg.	2
Shults, L. N., Avoca..........Steuben	29
Shultz, Geo., So. Granby......Oswego	1
Sibley, Herbert D., Olean..Cattaraugus	25
Sidney, Wallace H., Central Bridge..Sco.	9
Sidway, Charlotte S., Grand Island, Erie	28
Signor, E. H., Ithaca, R. D. 36..Tom.	5
Signor, F. B., Fulton, R. D. 7....Osw.	4
Simmons, Fred L., Cortland...Cortland	5
Simmons, George, Sterling Station.Cay.	8
Simms, Wallace S., West..Cattaraugus	3
Simonds, F. W., & Son, Darien Center, Genesee	22
Simonet, M. L., Evans Mills......Jef.	1
Simonton, Arthur, New Berlin....Chn.	1
Simpson & Trowbridge, Accord..Ulster	6
Simpson, Fred, Accord.........Ulster	6
Sin Cair, A. J., Kanona.......Steuben	7
Sincebaugh, Frank, Ithaca.......Tom.	2
Sisson, Clayton, Sherburne...Chenango	50
Sisson, C. W., Alfred........Allegany	6
Sisson, E. E., Almond.......Allegany	20
Sites, Mrs. Elizabeth, Marathon...Cor.	1
Slaight, A. J., Tuscarora...Livingston	5
Slater, Boynton, Plymouth.......Chn.	2
Slater, B. E., Preston.......Chenango	1
Slater, Emmett, Grahamsville.....Sul.	6
Slater, Wm. E., Sayville......Suffolk	20
Slaughter, E. W., Crystal Run..Orange	22
Sloane, George, White Lake...Sullivan	1
Sloper, T. D., Altmar..........Oswego	1
Smalley, Truman F., Stormville...Dut.	†10
Smith Bros., Cayuta.........Schuyler	16
Smith Bros., DeRuyter.......Madison	30
Smith & Lamb, Hamilton.....Madison	12
Smith, Arthur E., Berkshire.....Tioga	†7
Smith, A. G., Herkimer......Herkimer	5
Smith, A. H., Chappaqua........Wes.	22
Smith, A. H., Worcester........Otsego	1
Smith, Alex N., Monroe.......Orange	14
Smith, Alfred H., Smiths Basin..Was.	1
Smith, Chas., Waterloo........Seneca	1
Smith, C. D., Fort Plain..Montgomery	30
Smith, C. E., Gouverneur.......St. L.	4
Smith, Dwight B., Vernon Center..Oni.	1
Smith, Emerson D., Franklin Depot, Delaware	16
Smith, E. J., Saratoga Spa.......Sar.	1
Smith, Edw. P., Monroe......Orange	4
Smith, Frank, Montgomery.....Orange	4
Smith, Fred, Whitesville.....Allegany	..
Smith, Frederick, Goshen.......Orange	10
Smith, F. A., Bigelow....St. Lawrence	20
Smith, F. C., Guilford......Chenango	3
Smith, F. L., E. Beekmantown....Cli.	60
Smith, F. M., Gouverneur.......St. L.	4
Smith, Floyd M., Sheds......Madison	3
Smith, Fred N., E. Freetown.....Cor.	6
Smith, F. N., Trumansburg......Tom.	10
Smith, Frank Sullivan, Angelica...Alg.	5
Smith, Giles H., & Son, Waterford.Sar.	6
Smith, G. J., Cuyler........Onondaga	8
Smith, Harry C., Horse Heads, R. D. 1, Chemung	1
Smith, Herbert P., Smyrna.......Chn.	45
Smith, Isaac F., Earlville.....Madison	4
Smith, Jabez, Newark Valley....Tioga	54
Smith, J. L., E. Concord.........Erie	2
Smith, James W., Clayville.....Oneida	2
Smith, Lew C., Cayuta.......Schuyler	3
Smith, Mathew, Goshen.........Orange	27
Smith, Moses, Wallkill..........Ulster	19
Smith, Orange, Andover......Allegany	6
Smith, Stephen W., St. Johnsville..Mtg.	35
Smith, Wm., Hammondsport...Steuben	1
Smith, Wm. B., Hemlock....Livingston	1
Smith, W. J., & Sons, Sheds..Madison	3
Smith, W. L., Springville.........Erie	15
Smith, Wm. M., Hasbrouck....Sullivan	5
Smith, Wm. T., Saratoga Spa.....Sar.	1
Smith, Wing R., Syracuse...Onondaga	20
Smithene, W. P., Crystal Run...Orange	4
Smithers, E. R., Heuvelton......St. L.	4
Snell, Mrs. Darius, Blodgett Mills..Cor.	5
Snell, Fred J., Lebanon.......Madison	7
Snell, G. B., Chemung.......Chemung	13
Snider, William T., Walden.....Orange	40
Snow, W. B., Rexville........Steuben	30
Snyder, A., & Son, W. Danby.....Tom.	18
Snyder, D. P., Cuba.........Allegany	3
Snyder, Ernest C., Cazenovia, R. D. 2, Onondaga	5
Snyder, R. J., Holland Patent....Oni.	1
Snyder, Walter L., Prattsburg....Stu.	5
Soper, L. R., Hammond........St. L.	20
Sornberger, Geo. R., Fultonville..Mtg.	1
Soule, Wm., & Son, Craryville.....Col.	7
Southard, Ward, Fulton, R. D. 8..Osw.	1
Southworth, S. Wesley, Moravia...Cay.	5
Sowter, Geo. H., Chittenango....Mad.	5
Sparks, Geo. H., Wallkill.......Ulster	2
Spaulding, Elmer, New Berlin....Chn.	4
Spaulding, H. A., Groton....Tompkins	10
Spaulding, L. E., Bangor.....Franklin	1
Spear, Leon A., Potsdam........St. L.	1
Spencer, Geo. A., Tully......Onondaga	†8
Spencer, H. W., & Son, Malone....Fr.	5
Spink Sisters, Rodman.......Jefferson	5
Spink, A. L., Watertown.....Jefferson	1

† Including pure-bred, not registered.

Spink, Elon P., Attica........Wyoming	†4
Spohr, Conrad, Grand Island.....Erie	1
Spooner, E. J., & Son, Stockbridge, Madison	9
Spooner, M. G., Madison......Madison	42
Sponenberg, R. L., Phoenix....Oswego	6
Sprague, Fred A., Burlington Flats..Ots.	1
Sprague, F. B. & W. P., Smyrna..Chn.	20
Sprague, Wm. L., Greenwich.....Was.	4
Springer, D. H., Mohawk.....Herkimer	10
Springsteel, G. J., White Plains...Wes.	15
Sprott, Walter J., Wilton....Saratoga	3
Sprye, E. M., Heuvelton.........St. L.	5
Spurr, C. W., Sherburne.....Chenango	3
Squires & Barry, Marathon...Cortland	6
Squires, W. T., No. Brookfield....Mad.	4
Stacy, Chas. R., Canton..St. Lawrence	5
Stafford, Henry, McGraw ....Cortland	5
Stagner, Wm., Lockport.......Niagara	4
Stamp, D. B., Gainesville.....Wyoming	2
Stanford, E. S., Rome.........Oneida	1
Stanton, D. J., German......Chenango	2
Stanton, J. A., & Son, New Woodstock, Madison	85
Starks, A., Machias......Cattaraugus	3
Starkweather, R. G., Jordanville..Her.	60
Starkwether, E. C., Madison..Madison	4
Stas, Matthew J., Fabius...Onondaga	8
State Agricultural and Industrial School, Industry .... Monroe	2
State Department of Agriculture, Albany .... Albany	198
Stearns, O. P., Winthrop.St. Lawrence	1
Stebbins, F. D., Earlville.....Madison	3
Stebbins, Monroe, Sherman.Chautauqua	1
Steele, B. T., Heuvelton..St. Lawrence	28
Steele, Daniel Tompkins, Shushan.Was.	4
Steele, H. G., Heuvelton.St. .Lawrence	2
Steffen, Charles J., Fairport...Monroe	3
Stein, Jansen H., Kyserike......Ulster	8
Steinhilber, G. W., & W. D., Evans Mills Jefferson	1
Stephens, E. B., Canisteo, R. D. 1.Stu.	25
Stephens, H. L., Canisteo.....Steuben	24
Stephens, Dr. John H., W. Winfield, Herkimer	30
Stephens, K. O., Wales..........Erie	1
Stephens, P. E., Canisteo, R. D. 1.Stu.	3
Sterling, Gilbert, Smithville..Jefferson	5
Stevens Brothers Co., Liverpool..Ono.	400
Stevens, C. O., & Son, Chenango Forks, Broome	4
Stevens, C. P., Loon Lake....Franklin	26
Stevens, E. E., & Son, Wilson..Niagara	9
Stevens, F. E., Glens Falls.....Warren	20
Stevens, Henry, & Son, Lacona.Oswego	150
Stevens, Merton, Freeville...Tompkins	5
Stevens, M., & Sons, Pennellville.Osw.	15
Stevens, O. C., Greenville......Greene	12
Stevens, Ralph J., Liverpool.Onondaga	5
Stevens, Seely, Monroe ....Orange	12
Stevenson, F. S., Newfield...Tompkins	6
Stevenson, George, Salem..Washington	1
Stevenson, S. Harvey, Newfield..Tom.	5
Stewart, A. H., Harford......Cortland	10
Stewart, A. O., Lysander....Onondaga	4
Stewart, John M., Fulton, R. D. 7.Osw.	2
Stewart, J. T., Fonda....Montgomery	1
Stickle, A. R., Red Hook.....Dutchess	2
Stickles, H. H., Claverack....Columbia	31
Stiles, D. G., Richville..St. Lawrence	1
Stillman, Fred F., Brookfield.Madison	11
Stillman, S. L., So. Edmeston..Otsego	1
Stillson, George A., Afton....Chenango	13
Stillwagen, C. L., Verona......Oneida	1
Stilson, G. A., Afton..........Broome	13
Stilson, N. T., Candor..........Tioga	1
Stilwell, Milton, Worcester.....Otsego	1
Stocum & Maxson, Poolville...Madison	4
Stoddard, D. V., Otselic.....Chenango	22
Stoddard, J. F., Georgetown...Madison	3
Stoddard, John M., Horseheads..Chm.	6
Stoddard, O. J., & Son, Jamestown.Cha.	11
Stoker, Daniel, Lestershire....Broome	1
Stone, C. Adelbert, Mexico....Oswego	5
Stone, C. E., Sandy Creek.....Oswego	8
Stone, Louis A., Oneida......Madison	2
Stone, R. M., & Son, Marcellus....Ono.	30
Stoppard, W. B., Cortland....Cortland	5
Stork, Charles, Killawog ......Broome	1
Storm, Fred W., Brewster....Putnam	50
Storrin, J. H., Gouverneur.St. Lawrence	1
Stout, Dan'l H., Hammond.St. Lawrence	5
Stover, Peter L., Valley Falls....Ren.	5
Stover, W. E., Smyrna......Chenango	10
Stowe, George, Dryden......Tompkins	2
Stowell, C. H., Lebanon......Madison	4
Stowell, Daniel, Hamilton.....Madison	†1
Stowell, F. W., Bemus Pt.Chautauqua	5
Stowell, R. A., Phoenix........Oswego	5
Stradling, Frank, Earlville....Madison	27
Strahan, S. B., Friendship....Allegany	1
Strasenburgh, S. G., Morton...Orleans	1
Strever, Frank A., Pine Plains.Dutchess	1
Strickland Bros., Carthage...Jefferson	9
Strickland, W. R., Adams....Jefferson	1
Strife, N. N., W. Martinsburg...Lewis	†10
Stringer, W. H., Hamilton.....Madison	4
Strong, A. S. V., Vernon Center.Oneida	9
Strong, L. T., Turin............Lewis	6
Strong, Otis B., Morrisville...Madison	6
Strong, W. O., Afton.......Chenango	4
Stroup, D. M., Ilion.........Herkimer	12
Struble, D. L., Port Byron.....Cayuga	19
Studley, Sumner W., Dayton.....Cat.	8
Studwell, F. B., Lake Waccabuc...Wes	5
Stukey, D. C., Oxford.......Chenango	3
Suits, Christopher, Durhamville.Oneida	1
Suydam, Geo. B., Montgomery..Orange	6
Swan Bros., E. Randolph..Cattaraugus	25
Swan, A. F., E. Randolph..Cattarugus	17
Swartout, H. C., Hartwick Sem..Otsego	64
Swayer, Elmer E., Edmeston....Otsego	9
Swayze, H. L., No. Spencer......Tioga	*3
Sweetland, Leland I., Dryden.Tompkins	8
Sweetland, M. F., Dryden....Tompkins	21
Sweetland, Wm. O., Cortland.Tompkins	24
Sweezey, C. R., Marion........Wayne	7
Sweezey, L. J., Marion.........Wayne	26
Swick, Spencer, Hornell, R. D. 5..Stu.	3
Swift, F. C., Mohawk........Herkimer	2
Swift, Theo. H., Potsdam.St. Lawrence	25
Sylvester, Dr. G. E., Black River..Jef.	7
Syracuse University, Syracuse....Ono.	24
Taber, Charles F., Horseheads.Chemung	1
Tabor, Claire J., Meridian.....Cayuga	5
Tackabury, Samuel S., Sr., Hamilton, Madison	4
Taft, Martin L., No. Collins......Erie	1
Taggart, Charles, Hermon..St. Lawrence	1
Talbot, A. J., Clayville........Oneida	1
Talbot, Clarence A., Edmeston..Otsego	40
Talbot, Daniel N., Edmeston...Otsego	14
Talbot, E. L., Burlington Flats..Otsego	25
Tallman, W. D., Highland, R. D..Ulster	23
Tanner & Tooke, Hamilton....Madison	26
Tarbell, Bert, Marathon......Cortland	2
Tarbell, C. W., E. Freetown..Cortland	2
Tarbell, E. D., McLean......Tompkins	4
Tarbox, Reuben A., Collins.......Erie	1
Taylor, Mrs. Clara B., DeRuyter..Mad.	4
Taylor, Dr. E. A., Schuyler Lake..Ots.	35
Taylor, E. H., Perryville......Madison	7
Taylor, Mrs. Emma F., Watertown.Jef.	11
Taylor, F. E., Watertown....Jefferson	2
Taylor, Hudson S., Racket River.St. L.	5
Taylor, H. W., Moravia.......Cayuga	6
Taylor, John J., Hamilton....Madison	6
Taylor, J. S., & Collin, C. L., Chittenango .... Madison	10
Taylor, L. A., & H. W., Moravia.Cayuga	6
Taylor, Merton L., Oswego......Tioga	16

† Including pure-bred, not registered. * Part ownership.

Taylor, Raymond H., Randolph...Cat.	9
Taylor, S. B., Canastota......Madison	23
Taylor, W. D., No. Bangor....Franklin	2
Tears, Ira J., Walden.........Orange	10
Teeling, A. W., Ballston Spa..Saratoga	1
Teeps, Peter, Vernon..........Oneida	11
Tefft, E. J., Fayetteville.....Onondaga	49
Tefft, M. W., Greenwich...Washington	16
Telford, C. L., Edmeston.......Otsego	2
Teller, C. F., Syracuse......Onondaga	1
Teller, John H., Montgomery...Orange	3
Terpening, H. A., Ithaca, R. D. 1.Tom.	3
Terpenning, S. B., Fulton, R. D. 7.Osw.	6
Terry, Walter L., Walton.....Delaware	65
Terwilliger, F. R., Elmira, R. D. 4.Chm.	4
Terwilliger, F. S., Wallkill.....Ulster	6
Terwilliger, George D., Montgomery, Orange	4
Tew, W. H., Troupsburg.......Steuben	1
Thatcher, J. B., W. Danby..Tompkins	†8
Thomas, Chas. D., Herkimer.Herkimer	20
Thomas, D. C., Canisteo......Steuben	47
Thomas, Henry, Horseheads..Chemung	4
Thomas, H. D., Brookton....Tompkins	10
Thomas, J. C., Adams........Jefferson	3
Thomas, L. C., Black Creek..Allegany	18
Thomas, Merrill M., Hammond...St. L.	3
Thomas, S. G., Cassville.......Oneida	6
Thomas, W. H., Tioga Center....Tioga	8
Thompsett, R. W., & Sons, Delevan.Cat.	25
Thompson, A. Jay, Sherburne....Chn.	5
Thompson, Chas. L., Pine Bush.Orange	16
Thompson, C. R., Wellsville..Allegany	15
Thompson, Ernest B., Batavia.Genesee	8
Thompson, F. E., Cortland...Cortland	1
Thompson, Harold, Middletown.Orange	3
Thompson, J. A., Addison.....Steuben	1
Thompson, J. A., Dalton...Livingston	5
Thompson, J. J., New Woodstock.Mad.	15
Thompson, Robert M., Norfolk...St. L.	18
Thompson, S. M., Delhi......Delaware	25
Thompson, S. W., Salisbury..Herkimer	†4
Thomson, F. H., & Son, Holland Patent, Oneida	80
Thornton, M. E., Norwich...Chenango	6
Thorp, J. H., Gilbertsville......Otsego	15
Thurber, John M., Sherburne.....Chn.	35
Thurston, A. J., Munnsville...Madison	2
Tice, Clarence L., Wallkill......Ulster	1
Tierney, J. J., So. Hammond....St. L.	1
Tiffany, F. M., Norwich.....Chenango	20
Tiffany, H. M., Norwich.....Chenango	26
Tifft, Oscar, Moravia.........Cayuga	6
Tifft, W. H., Lacona..........Oswego	24
Tilden, Samuel J., New Lebanon..Col.	10
Tilford, John H., Hannibal....Oswego	1
Tilley, Wm. J., Theresa......Jefferson	7
Tilton, A. O., Patterson......Putnam	2
Timerman, Levi, Canastota ...Madison	32
Madison	32
Timerman, M. W., Hammond....St. L.	2
Timmerman, G. C., Orleans Four Corners .... Jefferson	8
Timmerman, M. & W. E., Fort Plain, Montgomery	18
Tobey, E. P., Smyrna.......Chenango	2
Tobey, Hobart C., Gilbertsville..Otsego	2
Toby, W. A., Lindley.........Steuben	3
Todd, A. C. & H. S., E. Rodman..Jef.	5
Tomezak, Geo. W., West Falls....Erie	26
Tomlinson, E. J., Cortland..Tompkins	2
Totman, Workman D., Norwich...Chn.	3
Tower, Franklin D., Albany...Albany	64
Townsend, Andrew B., Greenfield..Uls.	1
Townsend, Geo. J., Palmyra....Wayne	1
Townsend, Geo. L., Fosterdale....Sul.	4
Townsend, John, White Sulphur Springs .... Sullivan	1
Tracy, C. D., Massina....St. Lawrence	46
Tracy, Edgar L., Poolville....Madison	1
Trapp, H. D., Freeville.....Tompkins	1
Trask, E. L., & Kilmer, Chas., Wellsville .... Allegany	7
Traver, Chas. R., Rhinebeck..Dutchess	†6
Traver, Elmer, New Berlin..Chenango	50
Tremaine, C. A., Brisben.....Chenango	1
Trowbridge, Russell, Kyserike...Ulster	2
Troy, W. J., Ithaca.........Tompkins	13
Truckill, G. H., Liverpool...Onondaga	10
Truman, Ray S., Exeter.......Otsego	10
Truman, Welcome E., DeRuyter..Mad.	4
Tryon, Charlie W., Middletown.Orange	1
Tubbs, C. W., Woodhull......Steuben	11
Tucker, E. B., Hannibal.......Oswego	3
Tucker, Frank W., New Woodstock, Madison	39
Tullar, Angie C., Wellsville..Allegany	15
Tuller, Arthur P., Port Byron..Cayuga	1
Tully Farms, Tully.........Onondaga	30
Tupper, J. T., & Sons, W. Danby.Tom.	5
Turner, George, Holley ....Orleans	14
Turner, Otis, Jasper ....Steuben	8
Turner, Peter, Strait's Corners..Tioga	2
Tuttle, Charles H., Georgetown..Mad.	11
Tuttle, Delos S., Clinton......Oneida	4
Tuttle, DeWitt A., Walworth..Wayne	4
Tuttle, Irving, & Son, Oneida....Mad.	3
Tuttle, John S., Beerston...Delaware	7
Tweddle, Harry, Montgomery..Orange	5
Tyler, N. N., Clinton..........Oneida	†7
Tyler, R. B., Dryden........Tompkins	19
Ufford & Farnam, Canastota..Madison	18
Ufford, C. J., Canastota.......Madison	2
Underwood, J. B., Homer....Cortland	4
Updike, C. L., Seeley Creek..Chemung	26
Upham, Floyd, Lebanon ......Madison	1
Upham, M. & L., Lebanon, R. D...Mad.	7
Uptegrove, Mrs. C. W., Marathon.Cor.	†5
Utter, D. B., & Son, Georgetown Sta., Madison	19
Utter, Homer, Cuba.........Allegany	32
Vail, Fred J., New Berlin....Chenango	14
Vail, Harry, New Milford.....Orange	8
Vallier, John, Durhamville.....Oneida	1
Vanaller, Riley, Middleburg......Sco.	5
VanAlst, Gussie B., Pine Bush.Orange	1
VanAlst, Mrs. Moses, Pine Bush..Ora.	2
VanAlst, Moses M., Pine Bush..Orange	1
VanAlstine, B. G., Canajoharie...Mtg.	11
VanCott, H. H., Bainbridge..Chenango	6
Vandawalker, E. Howard, Camden..Onl.	4
VanDenburg, N. T., Preble...Cortland	10
Vandervort, E. A., Sidney...Delaware	70
Vendervort, J. H., Sidney Center..Del.	22
Van De Walker, A. H., Holland Patent, Oneida	2
Van Dewerker, George, Schuylerville, R. D. ....Saratoga	5
Van Doren, J. I., Three Mile Bay..Jef.	1
Van Doren, Rolla, Three Mile Bay..Jef.	2
Van Dresar, Ezra, Holland Patent, Oneida	1
Van Fleet, Edwin, Reynoldsville...Scu.	2
Vangelder, J. E., Owego........Tioga	15
Van Gorder & Rouze, Chemung..Chm.	1
Van Gorder, E. E., Pike.....Wyoming	3
Van Keuren, J. H., Rocklet....Orange	†5
Van Line, E. G., Moravia.....Cayuga	1
Van Name, Frank B., Houghton..Alg.	5
Van Nest, Eugene A., Red Hook..Dut.	2
Van Orman, E. L., So. Canisteo..Stu.	1
Van Patten, C., Union........Broome	4
Van Scoy, R. Drew, Candor.....Tioga	5
Van Sice, H. Irvin, Harpersville..Brm.	1
Van Steenborg & Bryce, McClure..Brm.	1
Van Tassell, Clarence, New Paltz..Uls.	1
Vantrin, E. J., Rosiere......Jefferson	10
Van Valkenburg, Wm. S., Little Falls, Herkimer	9
Van Valkenburgh, C. C., E. Masonville	1
Van Vranken, Adam, Rexford.....Sar.	7
Van Wagner, Solomon, Sherburne.Chn.	2
Van Wickle, C. H., Geneva....Ontario	1

† Including pure-bred, not registered.

Van Wie, Vernon J., Canajoharie..Mtg.	1
Van Wyck & Stringham, Hopewell Jct., Dutchess	3
Van Wyck, Frank A., Gardiner..Ulster	1
Van Wyck, William W., Gardiner..Uls.	7
Vaughan, John W., St. Johnsville..Ful.	5
Vaughn, N. C., Machias Jct.......Cat.	1
Vedder, Losee B., Schenectady....Scy.	7
Vedder, L. N. & Z., Fultonville...Mtg.	6
Veghte, Chas., Johnstown......Fulton	3
Velasco & Company, 128 Water St., New York ....New York	25
Verplanck, B. R., Fishkill-on-Hudson, Dutchess	1
Viele, Frank, Johnsonville..Rensselaer	24
Voorhees, Sheldon, Auburn....Cayuga	14
Vosburgh, Frank L., Earlville..Madison	31
Vosler, W. J., Meridian.......Cayuga	6
Vreeland, Mrs. G. W., Newark Valley, Tioga	1
Vunk, M. L., Virgil..........Cortland	1
Waddingham, F. H., Watertown..Jef.	1
Wadsworth, P. J., McGraw..Cortland	3
Wagner, N. J., Cohocton......Steuben	2
Wagner, R. G., Cuba........Allegany	11
Wahl, William, Wellsville....Allegany	7
Wait, J. G., Potsdam....St. Lawrence	3
Waite, Arthur, Kennedy...Chautauqua	1
Waite, R. M., Kennedy...Chautauqua	17
Waite, W. A., Kennedy...Chautauqua	1
Waite, W. A., & Son, Adams..Jefferson	40
Wakefield, Harvey H., W. Winfield, Herkimer	7
Wakefield, O. B., Falconer.Chautauqua	1
Waldo, Otis, Copenhagen.......Lewis	1
Wales, Addison, Plymouth...Chenango	†33
Wales, John J., Hornell......Steuben	1
Wales, Lemuel M., Black Creek...Alg.	6
Walhizer, A. G., Sodus........Wayne	1
Walker, John K., Holland Patent..Oni.	12
Wall, C. H., Savona..........Steuben	1
Wallace, C. G., & Son, Morristown, St. Lawrence	21
Walldorff, James, Alfred.....Allegany	*21
Wallis, E. G., & Son, Apulia.....Ono.	1
Walrath & Lynch, Chittenango...Mad.	40
Walrath, John J., E. Springfield..Ots.	33
Walseman, Wm., Carthage......Lewis	..
Walsh Bros., Babcock Hill.....Oneida	4
Walsh, John, Babcock Hill....Oneida	35
Walter, Frank, Castle Creek...Broome	3
Walton, John H., Palmyra.....Wayne	13
Walton, W. M., & Shaner, G. L., Bolivar .... Allegany	3
Walworth, Leon M., Norwich....Chn.	1
Wanzer, H. S., Pawling......Dutchess	8
Ward, C. S., Evans Mills....Jefferson	1
Ward, T. H., Fine.......St. Lawrence	1
Warn, George A., Little York..Cortland	10
Warner, Asa, Cincinnatus....Cortland	1
Warner, Corel A., So. Dayton....Cat.	1
Warner, G. R., Saratoga Springs, R. D. 1 ....Saratoga	5
Warner, S. W., Collins...........Erie	75
Warren, C. H., Verona.........Oneida	18
Warren, G. F., Ithaca......Tompkins	6
Warriner, C. W., Greenwood..Steuben	†3
Warriner, Fred H., No. Lawrence, St. Lawrence	1
Warriner, F. L., Greenwood...Steuben	7
Warriner, Harry E., Greenwich..Was.	9
Wart, Theo., & Son, Lacona....Oswego	7
Washburn, D. J., Adams.....Jefferson	19
Washburn, Harlow G., Heuvelton, St. Lawrence	18
Waterman, Geo. O., Delhi...Delaware	30
Watkins Bros., Camden.......Oneida	80
Watkins, D. W., Holland Patent..Oni.	11
Watkins, Ellsworth G., Canastota, Madison	6
Watkins, Frank D., Canisteo..Steuben	3
Watkins, R. D., King Ferry...Cayuga	2
Watkins, Thos. M., Smithboro...Tioga	2
Watson, Geo. M., Scio.......Allegany	9
Watson, Winfred H., Morristown..St. L.	4
Waufle, John, Canisteo.......Steuben	1
Way, Herbert C., Elmira....Chemung	26
Wayand, Leon, Penn Yan......Yates	5
Weast, James A., Delanson, R. D. 2, Schenectady	3
Weaver, Chas. F., Bath......Steuben	2
Weaver, H. D., Jackson Corners..Dut.	1
Weaver, Una E., Cazenovia...Madison	3
Webb, Sidney C., Sherburne..Chenango	3
Webster, C. M., Wyoming....Wyoming	..
Webster, P. A., Cazenovia....Madison	4
Weckesser, John, LaFargeville....Jef.	8
Wedderspoon, Mrs. G. & M., Cooperstown .... Otsego	4
Wedderspoon, James R., Cooperstown, Otsego	3
Wedderspoon, M. H., Cooperstown..Ots.	13
Weed, Charles J., W. Danby..Tompkins	3
Weed, Delos M., W. Danby...Tompkins	10
Weeks, Benj. H., Marietta..Onondaga	8
Weems, Dana W., Potsdam......St. L.	3
Wehner, W. A., Minisink......Orange	9
Weil, Jacob C., Town Line.......Erie	42
Weller, John J., Sherburne..Chenango	11
Welch, C. L., Philadelphia...Jefferson	1
Welch, Herbert A., Owego......Tioga	1
Welles, Geo. M., & Son, Elmira, R. D. 1, Chemung	30
Wellington & Cunningham, Cazenovia, Madison	7
Wellman, Morris, Ashville..Chautauqua	1
Wells, C. S., Goshen..........Orange	4
Wells, George, Hudson Falls.....Was.	16
Wells, Ira S., Little Genesee..Allegany	3
Wells, John, Friendship .....Allegany	24
Wells, Llewellyn E., Perryville..Mad.	2
Wells, Mary E., Little Genesee....Alg.	5
Wells, M. W., & Sons, Fillmore...Alg.	†7
Wells, R. C., Norwich.......Chenango	48
Wenham, Jas., Madison......Madison	4
Wentworth, H. C., Verona.....Oneida	3
Weser, Wm. H., Ellenville......Ulster	8
West, E. G., Gouverneur..St. Lawrence	1
West, E. M., Reber............Essex	50
West, Frank P., W. Edmeston...Mad.	38
Westervelt, Aubrey, Spencer....Tioga	5
Westfall, Emmet, Elmira.....Chemung	4
Westlake, S. D., & Son, Horseheads, Chemung	2
Wetherell, G. E., Westmoreland...Oni.	25
Wethey, Willard S., Port Byron..Cay.	13
Wetmore, F. J., Holland Patent...Oni.	4
Wheat, C. H., Hamilton......Madison	16
Wheat, L. M., & Co., Moravia..Cayuga	11
Whedon, Carl B., Little Valley....Cat.	5
Wheeler & Mayne, W. Edmeston.Otsego	15
Wheeler, Mrs. C. D., & Son, Cassville, Oneida	6
Wheeler, E. D., Eaton.......Madison	3
Wheeler, G. W., Ticonderoga....Essex	1
Wheeler, Harry D., W. Winfield..Her.	63
Wheeler, Irving A., Massena....St. L.	1
Wheeler, S. J., Kennedy..Chautauqua	4
Whipple, D. E., Little Valley.....Cat.	8
Whipple, F. C., Cooperstown...Otsego	1
Whitbeck, Cornelius, Craryville...Col.	10
White & Parker, So. New Berlin..Chn.	7
White, Albert W., Wappingers Falls, Dutchess	26
White, Bert, Edmeston ....Otsego	7
White, D. M., Bath..........Steuben	15
White, F. C., Cincinnatus....Cortland	2
White, F. H., Richfield Springs...Ots.	46
White, George C., Hopewell Jct..Dut.	45
White, Harry F., Blossville....Oneida	10
White, Irvin H., Guilford...Chenango	3
White, John B., Bemus Point....Cha.	31
White, J. L., Locke...........Cayuga	20
White, S. M., So. Edmeston....Otsego	8

† Including pure-bred, not registered. * Part ownership.

White, Walter M., Madrid......St. L.	1
White, William, Hudson Falls, R. D. 1, Washington	1
White, Willis, Conewango Valley..Cha.	8
Whitehouse, Henry J., Mt. Kisco..Wes.	7
Whitford, A. O. H., Adams Center, Jefferson	1
Whitford, E. A., Adams Center...Jef.	45
Whitford, George, Adams ....Jefferson	1
Whitford, Schuyler S., Alfred Station, Allegany	14
Whitman, B. L., Dickinson Center..Fr.	1
Whitman, Frank, Brushton ..Franklin	10
Whitman, J. H., Jordan....Onondaga	4
Whitmarsh, Frank P., Cuyler.Cortland	5
Whitmore, H. E., Avon....Livingston	2
Whitney, A. D., Madrid..St. Lawrence	1
Whitney, F. C., Ilion.......Herkimer	80
Whitney, G. N., Mexico, R. D. 3..Osw.	5
Whitney, H. C., Eaton.......Madison	20
Whitney, Hugh F., Pulaski....Oswego	1
Whitney, John, Sidney Center....Del.	1
Whittemore, Mark, Union......Broome	1
Wichie, John, Kirkville.....Onondaga	1
Wicks, Wm. S., Barneveld.....Oneida	1
Wickwire, C. E., Hamilton....Madison	6
Wickwire, H. H., Hubbardsville..Mad.	50
Wightman, Homer, Marathon.....Cor.	6
Wightman, Ransford B., So. Hammond, St. Lawrence	28
Wilcox & Hartshorn, Lebanon....Mad.	8
Wilcox, B. L., Little Valley......Cat.	6
Wilcox, Charles, Georgetown Station, Madison	2
Wilcox, Charles A., Little Valley..Cat.	5
Wilcox, C. A., Fulton, R. D. 1...Osw.	23
Wilcox, C. C., Fulton..........Oswego	..
Wilcox, Edgar T., Hornell....Steuben	5
Wilcox, Fred A., Fulton......Oswego	15
Wilcox, Gerry H., Cherry Creek..Cha.	4
Wilcox, Merritt, Moravia .....Cayuga	17
Wilcox, S. B., Oswego Falls....Oswego	1
Wilcox, W. O., Pennellville....Oswego	25
Wilcox, W. W., Waverly........Tioga	1
Wilder, Joseph, Warsaw......Wyoming	8
Wilkinson, O. L., Rexville....Steuben	35
Willard State Hospital, Willard..Sen.	†26
Willard, E. M., Addison, R. D. 1..Stu.	3
Willcox, H. H., Earlville....Chenango	18
Willcox, M. K., Oxford.....Chenango	2
Willcox, S. K., Smyrna.....Chenango	20
Willets, Samuel, Roslyn.......Nassau	..
Williams Bros., Canajoharie .....Mtg.	†5
Williams Bros., Clinton ....Oneida	4
Williams Bros., Deerfield, R. D. 1..Oni.	17
Williams, Aug. H., LaSalle...Niagara	†6
Williams, A. J., W. Winfield.....Her.	2
Williams, Chester, Waterport..Orleans	1
Williams, C. L., West....Cattaraugus	1
Williams, Daniel H., Houghton...Alg.	7
Williams, F. E., Earlville...Chenango	45
Williams, H. & J. E., Waterville..Oni.	1
Williams, Harold M., Ft. Edward..Was.	3
Williams, J. T., Mannsville..Jefferson	1
Williams, Leland H., Fulton...Oswego	7
Williams, Leroy B., Syracuse.....Ono.	27
Williams, Nathan, Wellsville..Allegany	27
Williams, R. B., Deer River.....Lewis	1
Williams, Stoddard E., R. D. 3, Kirkville .... Onondaga	1
Williams, W. J., Jr., Caledonia...Liv.	1
Williamson, Geo. M., Canisteo.Steuben	15
Williamson, John H., So. Hammond, St. Lawrence	11
Williamson, T. P., So. Hammond..St. L.	12
Wilson, Barton, Central Square..Osw.	3
Wilson, Charles, Forestville......Cha.	6
Wilson, C. A., Theresa.......Jefferson	14
Wilson, C. H., Jordan......Onondaga	8
Wilson, D. A., Great Valley......Cat.	8
Wilson, E. M., Tioga Center....Tioga	5
Wilson, J. A., Houghton.....Allegany	4
Wilson, J. D., Ashville....Chautauqua	7
Wilson, John D., Greenwich, R. D. 1, Washington	3
Wilson, J. E., Linwood.....Livingston	1
Wilson, J. Warren, Hammond....St. L.	1
Wilson, W. J., Central Square..Oswego	†1
Wing, G. F., & Sons, Bliss...Wyoming	1
Wing, K. J., Unadilla Forks....Otsego	2
Wingert, J. H., Caneadea.....Allegany	10
Winham, James, Madison ....Madison	4
Winsor, V. S., Guilford......Chenango	3
Winston, L. D., Chenango Forks..Chn.	2
Winters, Byram L., Smithboro..Tioga	120
Winters, Lewis E., Westtown...Orange	3
Wintringham, H. C., Millerton.Dutchess	36
Wise, J. H., Fulton...........Oswego	17
Witbeck, Geo. H., Nassau, R. D...Ren.	4
Witter, E. H., Cuba..........Allegany	26
Wolcott, C. S., Elmira, R. D. 1....Chm.	1
Wolfe, H. J., Bartlett...........Oneida	4
Wolfe, L., Whitehall......Washington	5
Wolfen Bros., Burlington Flats.Otsego	4
Wood & Watson, Newburg.....Orange	3
Wood, Arthur, Lebanon.......Madison	4
Wood, A. Wayne, Marcy.......Oneida	14
Wood, B. W., Deerfield.........Oneida	15
Wood, C. J., Cato............Cayuga	8
Wood, D. G., Bemus Point.Chautauqua	14
Wood, Don J., W. Winfield...Herkimer	45
Wood, Elmer B., Middleburg.Schoharie	1
Wood, Franklin, Woodville...Jefferson	45
Wood, Fred E., W. Winfield..Herkimer	5
Wood, Mrs. G. Herbert, DeRuyter.Mad.	4
Wood, H. C., Morrisville.....Madison	68
Wood, Henry H., Whitehall.Washington	7
Wood, James, Collins ....Erie	1
Wood, John H., Whitesville..Allegany	14
Woodcock, E. W., Rensselaer Falls.St. L.	14
Woodcrest Farm, Rifton........Ulster	210
Woodin, Anna Waterman, Newport.Her.	27
Woodin, Geo. T., Newport...Herkimer	4
Woodman, S. S., Earlville....Madison	15
Woodman, Z. S., Hamilton....Madison	1
Woodruff, B. B., Burrs-Mills..Jefferson	†11
Woods, Henry S., Camden......Oneida	1
Woods, John C., Munnsville...Madison	7
Woodside, A. E., Hammond......St. L.	†4
Woodward, Frank H., Adams Center, Jefferson	3
Woodward, H. E., Ensenore....Cayuga	20
Woodward, W. A., Cortland, R. D.Cor.	6
Woodworth, E. E., & Co., Alfred...Alg.	20
Woodworth, Ora E., Alfred...Allegany	†*9
Woods, John C., Munnsville...Madison	7
Wooster, Fred M., Webster.....Monroe	1
Wormer, Eliakim F., Guilderland Center .... Albany	10
Wright, Austin L., Little York....Cor.	†6
Wright, B. F., Ransomville....Niagara	12
Wright, Charles, Plattsburg ...Clinton	6
Wright, Chas. A., Smith's Basin..Was.	4
Wright, Chas. E., Franklinville...Cat.	5
Wright, Chelson S., Ogdensburg...St. L.	3
Wright, D. W., Cambridge..Washington	40
Wright, E. W., Burlington Flats.Otsego	9
Wright, Geo. S., Cambridge.Washington	5
Wright, John, Nichols ....Tioga	8
Wright, L. L., Ogdensburg.St. Lawrence	1
Wright, L. M., Smiths Basin....Was.	13
Wright, Raymond E., Lyndonville..Orl.	1
Wright, Thomas E., Webster...Monroe	1
Wyckoff, A. G., Marcellus....Onondaga	26
Wyeth, Madison J., Lowville....Lewis	2
Wykle, Alexander H., Clyde....Wayne	20
Wylie, Guy D., Harpersville....Broome	4
Wyllys, H. A., E. Randolph.Cattaraugus	2
Wyman, Ernest B., Rodman..Jefferson	1
Yager, B. E., Durhamsville.....Oneida	10
Yaxley, Edward, Medina......Orleans	4
York, Alexis, Poolville ....Madison	6
York, A. L., Poolville.........Madison	4

† Including pure-bred, not registered. * Part ownership.

York, J. F., Poolville.........Madison	**2**
Youmans, Frank A., McLean..Tompkins	**2**
Young, A. E., Cobleskill.....Schoharie	**1**
Young, C H., Mt. Vision.......Otsego	**7**
Young, Owen D., Van Hornesville.Her.	**38**
Young, Theodore, Darien.......Genesee	**25**
Youngs, Norman M., Oxford Depot.Ora.	**†1**
Youngs, R. A., Little Valley.....Cat.	**5**
Yung Bros., Germantown....Columbia	**5**
Zeliff, C. S., Hornell..........Steuben	**29**
Zickler Albert S., Montgomery.Orange	**4**
Zickler, Geo. E., Montgomery...Orange	**4**
Zimmer, F. E., Evans Mills..Jefferson	**22**
Zimmer, J. A., Philadelphia..Jefferson	**14**
Zimmer, Louis, Lafargeville...Jefferson	**5**
Zimmerman, Geo., St. Johnsville..Mtg.	**2**
Zoller Bros., Hammond...St. Lawrence	**84**
Zoller, Lawrence, Redmond...Jefferson	**2**

JERSEY

The American Jersey Cattle Club,
R. M. Gow, Sec'y.,
8 *W. 17th St., New York.*

Acker, A. F., E. Bethany.....Genesee	**6**
Acker, Milo M., Hornell.......Steuben	**11**
Agnew, Mrs. Cornelius R., Palisades, Rockland	**3**
Ahrens, Chas., Cassadaga..Chautauqua	**2**
Alfred University, Alfred.....Allegany	**20**
Allison's Island Farm, Waddington, St. Lawrence	**40**
Anderson, Joseph C., Auburn..Cayuga	**9**
Arnold, E. S., Otego...........Otsego	**†44**
Ashton, C. W., Brasher Falls....St. L.	**6**
Atwood, A. A., & Son, Hopkinton.St. L.	**1**
Avery, Frank, Ilion .... Herkimer	**7**
Ayer & McKinney, Meridale..Delaware	**331**
Ayers, H. W., Jamestown..Chautauqua	**52**
Babcock, Elias, Schoharie, R. D. 2.Sco.	**14**
Baker, Andrew, Freeville....Tompkins	**5**
Barager, W. S., Hunt......Livingston	**2**
Barger, Johnson, Summit....Schoharie	**1**
Barlow, J. Q., Beerston.....Delaware	**1**
Barney, Geo. E., Richford.......Tioga	**10**
Barney, G. M., Andover......Allegany	**†7**
Barton, David M., Mexico, R. D. 3.Osw.	**†2**
Bassett, G. S., Coopers Plains..Steuben	**3**
Beal, Catherine E., Palmyra....Wayne	**7**
Beatty, John W., Pawling....Dutchess	**11**
Beckwith, L. L., Ludlowville.Tompkins	**9**
Bell, Urban C., & LeVan, C. D., Sanborn .... Niagara	**†12**
Benington, Chas., Edmeston....Otsego	**†3**
Benjamin, J. Howell, Riverhead..Suf.	**2**
Bennett, B. G., 814 Granite Bldg., Rochester .... Monroe	**3**
Bentley, E. A., Wellsville.....Allegany	**7**
Bentley, Eva E., Wellsville...Allegany	**3**
Benton, E. C., Marcy..........Oneida	**39**
Besemer, W. Gaylord, Besemers..Tom.	**19**
Beyea, Horace, Dundee, R. D. 7...Scu.	**4**
Bigelow, E. U., Altay........Schuyler	**9**
Blackney, C. O., Perrysburg......Cat.	**2**
Blaisdell, R. Van B., Coeymans.Albany	**1**
Bloomer, Robert, Lisbon..St. Lawrence	**3**
Bogardus, John C., Knox.......Albany	**16**
Boldt, G. C., Alexandria Bay.Jefferson	**3**
Bolton, Harvey E., Batavia....Genesee	**2**
Borden, F. W., Schaghticoke.Rensselaer	**1**
Borthwick, J. F., & Son, Freehold..Grn.	**†12**
Boughton, Geo. L., Valley Falls...Ren.	**8**
Bouton, Harry B., Ashville.......Cha.	**3**
Bowdoin, Temple, New Hamburg..Dut.	**4**
Bowen, F. W., Barneveld.......Oneida	**†22**
Bowen, John, Barneveld ...... Oneida	**38**
Bower, John L., King Ferry...Cayuga	**10**
Brace, B. W., Albion..........Orleans	**9**
Brady, Chas., Cobleskill.....Schoharie	**60**
Brandes, Edward H., Wellsville...Alg.	**1**
Briarcliff Farms, Pine Plains.Dutchess	**201**
Briggs, E. W., Medina.........Orleans	**1**
Briggs, H. E., Franklin......Delaware	**30**
Britt, Frank, Middleport......Niagara	**9**
Britton, R. D., Canastota......Madison	**†27**
Bronson, J. B., Durham........Greene	**2**
Brown & Rowe, Warsaw......Wyoming	**48**
Brown, Archer H., So. New Berlin.Chn.	**35**
Brown, Chas. H., Dundee, R. D. 19.Yat.	**2**
Brown, Chas. J., Rochester....Monroe	**13**
Brown, E. T., Freeville......Tompkins	**†20**
Brown, James, Trumansburg.Tompkins	**2**
Brown, Jas. A., Poolville.....Madison	**5**
Brown, Robert M., Gouverneur..St. L.	**12**
Brown, William J., Garrison...Putnam	**5**
Brown, W. L., Oneonta........Otsego	**4**
Bruce, N. J., Ithaca, R. D. 1.Tompkins	**10**
Buell, Ely, Irondequoit ....Monroe	**20**
Buell, Fred G., Clyde...........Wayne	**2**
Bull, Wilbur C., Watertown..Jefferson	**9**
Burdick, Frank, Franklin .. Delaware	**4**
Burditt, W. D., Cooperstown....Otsego	**†5**
Burham, D. E., Philadelphia..Jefferson	**1**
Burr, N. E., Boonville..........Oneida	**9**
Burr, W. S., Interlaken........Seneca	**†5**
Bush, Seth J. T., Morton......Orleans	**8**
Burton, S. J., Worcester, R. D. 1..Ots.	**†30**
Button, J. K., Franklinville.Cattaraugus	**2**
Cahoon, G. E., Rutsonville......Ulster	**4**
Calder, John J., Freehold......Greene	**1**
Campbell, S. G., Salem, R. D....Wash.	**5**
Capron, W. W., & Wood, Oliver, Portlandville .... Otsego	**5**
Case, Burt, Dewittville, R. D. 44..Cha.	**†10**
Case, Oliver W., New Suffolk...Suffolk	**2**
Case, Wickham, Cutchogue ... Suffolk	**2**
Caulkins Bros., Naples........Ontario	**4**
Chadwick, John S., Lakemont....Yates	**3**
Chadwick, T. M., Lakemont......Yates	**2**
Chapin, R. E., & Son, Batavia.Genesee	**4**
Chapman, J. J., Barrytown...Dutchess	**2**
Chapman, W. I., Sauquoit......Oneida	**5**
Chase, C. G., King Ferry.......Cayuga	**†15**
Chase, Harry B., Earlville....Madison	**6**
Chase, Lynn, New Berlin....Chenango	**†2**
Clapper, A. H., Lakemont.......Yates	**†3**
Clark & Emery, Belvidere....Allegany	**160**
Clark, E. B., Elma...............Erie	**†4**
Clark, Geo. C., Mt. Kisco..Westchester	**..**
Clark, M. H., & M. A., Elma.....Erie	**†23**
Clemson, Geo. U., Middletown..Orange	**†2**
Cleveland, S. R., Watertown..Jefferson	**60**
Clyde, Wm. P., Jr., New Hamburg.Dut.	**32**
Cochran, Alex. S., East View.....Wes.	**4**
Cochran, Gifford A., Mt. Kisco...Wes.	**9**
Collins, Frank M., Mannsville.....Jef.	**1**
Colwell, Richard, Wellsburg..Chemung	**1**
Cook, Geo. W., Tarrytown.Westchester	**4**
Cook, James C., Caroline Depot..Tom.	**12**
Cookingham, John T., Rhinebeck..Dut.	**22**
Cooley, A. H., Little Britain....Orange	**25**
Cornell University, Ithaca...Tompkins	**20**
Cotton, Geo. I., Friendship...Allegany	**2**
Cotton, J. C., Almond........Allegany	**6**
Cowan, C. C., Conewango Valley...Cat.	**3**
Cowden, L. D., Fredonia...Chautauqua	**19**
Cowdin, Elliott C., Mt. Kisco.....Wes.	**28**
Cowdin, John E., E. Norwich...Nassau	**5**
Cox, Walter S., Scottsville.....Monroe	**1**
Craig Colony, Sonyea......Livingston	**2**
Craig, J. Leslie, Ogdensburg.....St. L.	**35**
Craven, John, E. Aurora.........Erie	**3**
Criddle, Chas., Nunda......Livingston	**7**
Crosby, E. E., Lockport.......Niagara	**1**
Crosby, Mannsell S., Rhinebeck...Dut.	**1**
Cross, O. E., & Son, Niobe..Chautauqua	**9**
Cutting, W. Bayard, Oakdale...Suffolk	**†28**
Dandy, Samuel, Lisbon...St. Lawrence	**1**
Darlington, C. F., Mt. Kisco.....Wes.	**20**

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† Including pure-bred, not registered.

Davis, Adelbert C., Port Jefferson. Suf.	13
Davis, Frank, Belmont ...... Allegany	5
Davis, Geo. W., So. Otselic. . Chenango	5
Davis, John Y., Cayuga .... Cayuga	30
Davis, Levi S., Canisteo .... Steuben	†17
Dawley, F. E., Fayetteville. . Onondaga	5
Day, Chas. F., Java .... Wyoming	1
Delano, F. S., Ensenore .... Cayuga	45
Depew, G. M., & Son, Canandaigua, Ontario	3
Dickerman, W. B., Mamaroneck . . . Wes.	20
Dinehart, John C., W. Copake .... Col.	6
Doolittle, Edgar, Harpersville. . Broome	14
Dotshome Farms, Fayetteville .... Ono.	12
Doughty, Seward, Romulus ..... Seneca	1
Dow, D. C., Jr., Cobleskill . . . Schoharie	9
Drummond, Robert L., 59 Genesee St., Auburn .... Cayuga	7
Duel, Geo. A., German .... Chenango	1
Dusenbery, Zina B., Brookton .... Tom.	12
Dusenbury, E. G., Portville ...... Cat.	53
Dutcher, J. Gerow, Pawling . . . Dutchess	50
Earley, Crayton L., Andover. . Allegany	12
Easson, J. Bryce, Walton, R. D. 2. . Del.	7
Easton, Edward, Jr., Selkirk .... Albany	1
Eddy, E. E., Little Valley. . Cattaraugus	1
Eldridge, Roswell, Great Neck. . Nassau	6
Evans, E. R., Ithaca .... Tompkins	9
Evans, Frank G., 759 N. Jay St., Rome, Oneida	6
Evergreen Farm Dairy Co., Batavia, Genesee	50
Everingham, E. B., Warsaw. . Wyoming	3
Fargo, E. E., Falconer .... Chautauqua	†13
Fargo, G. R., Ashville ..... Chautauqua	6
Fenton, George, Utica .... Oneida	†26
Ferris, Geo. L., Atwater .... Cayuga	13
Finch, E. D., Walton .... Delaware	4
Fleet, Mrs. Josephine, Huntington. Suf.	4
Fleming, Wm., Jr., Granville ..... Was.	52
Flint, Austin, Jr., Millbrook. . Dutchess	10
Folger, Montraville, & Sons, Olcott. Nia.	3
Foxhollow Farm, Rhinebeck. . Dutchess	4
Frazer, Isabel & Herbert, Garrison. Put.	12
Fredenburg, S. E., & Son, Afton . . . Chn.	2
Frost, Wert W., Trumansburg .... Tom.	1
Gail, Harry S., E. Aurora .... Erie	60
Gail, M. T., E. Aurora .... Erie	4
Gates, Mrs. N. L., Phoenix .... Oswego	2
George, Esther B., Freeville. . Tompkins	5
Germain, G. A., Willink .... Erie	6
Getty, John J., Granville . . . Washington	23
Getty, Wm. E., Granville, R. D. 2. Was.	2
Gibbs, F. R., Harpersfield ...... Broome	†15
Gifford Bros., Westdale .... Oneida	†10
Gifford, W. H., E. Syracuse, R. D. 3, Onondaga	†35
Gillespie, Francis C., Albany . . . Albany	19
Godfrey, F. S., & J. H., Trumansburg, Tompkins	7
Goodson, Wm., Deansboro ...... Oneida	2
Gordon & Hallingworth, Pultneyville, Wayne	19
Gould Bros., East Hampton .... Suffolk	40
Gould, C. C., Hobart .... Delaware	45
Grasslands Farm, East View ..... Wes.	4
Greene, Clifford E., Greene . . . Chenango	10
Gregory, J. M., Skaneateles. . Onondaga	29
Grunder, D. C., Angelica ...... Allegany	†58
Guthrie, Edward A., Athens .... Greene	1
Hallister, Granger A., Rochester. Monroe	1
Hand, J. Howard, Wainscott . . . Suffolk	5
Haney, Henry T., Bridgehampton. . Suf.	10
Hanggi, Alfred, Naples .... Ontario	2
Hanson, W. J., Schenectady, R. D. 7, Schenectady	13
Hargrave, Joseph, Lisbon. St. Lawrence	18
Harmon, Frank H., Ogdensburg . . . St. L.	10
Harper, H. W., N. Kortright ...... Del.	17
Harrington, W. P., Falconer ..... Cha.	4
Harris, S. G., Tarrytown. . Westchester	8

Harrison Bros., Milford .... Otsego	20
Harrison, Wm., Laurens .... Otsego	13
Hart, Chas. M., Locke .... Cayuga	2
Harvey, D. D., Bombay .... Franklin	5
Hastings, James E., Bovina Center. Del.	22
Hathaway, L. L., Collins .... Erie	8
Hawks, Edwin A., Trumansburg. Seneca	†5
Hawley Stock Farms, Batavia. . Genesee	14
Hayden, Wm., & Son, McDonough. Chn.	32
Hazard, F. R., Syracuse ..... Onondaga	8
Headden, John C., Spring Valley. . Roc.	†9
Healy, A. A., Poughquag .... Dutchess	44
Hedges, S. C., East Hampton . . . Suffolk	15
Hengerer, R. W., Hamburg .... Erie	3
Hewitt & Jarvis, Peru .... Clinton	8
Hillis, Sarah B., Peru .... Clinton	4
Hillis, A. W., So. Worcester .... Otsego	8
Hobbs, W. R., Ogdensburg ...... St. L.	1
Hobert, Walter B., Schenectady. . Scy.	30
Holcomb, E. B., Ilion .... Herkimer	14
Hollister, Raymond H., Slaterville Springs .... Tompkins	1
Horner, Jos. H., Angelica .... Allegany	†4
Horton, E. E., Binghamton .... Broome	10
Hosford, J. Spencer, Kinderhook. . Col.	95
Houseknecht, David, Corfu .... Genesee	1
Howard, M. H., Mattituck ..... Suffolk	10
Howe, D. N., Whitesville ..... Allegany	11
Howe, H. W., Madrid Springs . . . St. L.	30
Howland, E. B., Walton ..... Delaware	30
Hubbard, R. F., Elk Creek ..... Otsego	11
Hudson, C. I., E. Norwich ..... Nassau	142
Huggins, Charles H., Smiths Basin, Washington	†25
Hull, George D., Cornwallville. . Greene	1
Hulse, Howard E., Calverton . . . Suffolk	5
Hulse, J. Alonzo, Wading River . . . Suf.	6
Hunt, Chester I., Hunt ..... Livingston	10
Hunter, J. H., Valley Falls. . Rensselaer	10
Hutchins, Geo. P., Lamontville. . Ulster	3
Ideal Stock Farm, E. Aurora ..... Erie	4
Ingalsbe, Grenville M., Hudson Falls, Washington	†15
Ingraham, F. B., Naples ...... Ontario	11
Inscho, H. S., Bradford .... Steuben	1
Jacobs, J. D., Whitesboro .... Allegany	6
Jameson & Field, So. Wales ...... Erie	8
Jameson, G. A., M. D., So. Wales. . Erie	8
Jenney, A. D., Syracuse ..... Onondaga	4
Jennings, Walter, Cold Spring Harbor, Suffolk	17
Jewett, Henry C., E. Aurora ..... Erie	12
Johnson, A. B., Vail Mills ..... Fulton	15
Johnston, Allen W., Schenectady. . Scy.	2
Johnston, Ernest W., Durham. . Greene	2
Jones, A. F., Bridgehamton .... Suffolk	8
Jones, F. J., Sauquoit .... Oneida	25
Jones, Wm. M., East Hampton. Suffolk	12
Karker, A. J., Cobleskill .... Schoharie	14
Keeney, F. B., Warsaw ...... Wyoming	50
Kelley, M. H., Wyoming ..... Wyoming	†4
Kelso, J. A., Walden .... Orange	10
Kendrick, S. D., Glens Falls . . . Warren	†24
Kenotin Farm, Washington Mills. . Onl.	32
Kerr, A. L., Brockport .... Monroe	1
Ketner, Frank W., Hudson. . Columbia	29
King, Hubert P., Trumansburg . . . Sen.	1
Kingsbury Homestead, Oswego . . . Osw.	25
Kinne, H. M., Romulus .... Seneca	12
Kirk, C. W., Poughkeepsie . . . Dutchess	8
Knapp, B. R. & O. A., Cortland . . . Cor.	10
Lake, Stephen R., White Creek . . . Was.	2
Lambert & Van Ness, Davenport. . Del.	5
Lampman, Lewis, Coxsackie .... Greene	70
Lamson, B. G., Canton . . . St. Lawrence	2
Lane, Barent H., Coxsackie .... Greene	20
Lane, Geo. E., Potsdam. . St. Lawrence	20
Langworthy, John F., Alfred. . Allegany	8
Lapham, Geo. P., Macedon ..... Wayne	10
Lasher, Frank C., Watertown ..... Jef.	30
Lathrop, J. A., Freeville .... Tompkins	13
Lawrence, Margaret, Palisades .... Roc.	6

† Including pure-bred, not registered.

Leake, E. T., Romulus.........Seneca	4
Lebarron, John, Cambridge......Was.	3
Lee, M. R., Canandaigua......Ontario	1
Lee, R. P., Elma.................Erie	4
Legg, M. Earl, Moravia.......Cayuga	39
Lentilhon, Eugene, Bay Shore..Suffolk	2
Letchworth & Delano, Ensenore..Cay.	46
Lewisohn, Adolph, Ardsley......Wes.	12
Lincoln Agricultural School, Lincolndale .... Westchester	3
Littel, H. M., Macedon........Wayne	20
Loop, Fred F., Wappingers Falls..Dut.	†3
Lukins, Wm., Skaneateles...Onondaga	7
Lyne, S. T., Fredonia.....Chautauqua	2
Mabon, A. F., Sanborn.......Niagara	†10
McAvoy, E. F., Cambridge.Washington	20
McBain, A. D., Brockport.....Monroe	†2
McCune, Karl L., Shavertown....Del.	8
McFadden, J. Albert, Lisbon.....St. L.	8
McGuire, Horace, & Wood, Hiram R., Pittsford .... Monroe	†13
Machmer, George, Eden..........Erie	7
Mack, Henry J., Tappan.....Rockland	†12
McLallen, Mrs. Flora E., Trumansburg, Tompkins	7
McLallen, Henry C., Trumansburg, Tompkins	9
McLallen, Herbert L., Trumansburg, Tompkins	25
McLaury Bros., Portlandville..Otsego	30
McLouth, Charles, Palmyra....Wayne	†2
McMillin, C. A., Cambridge......Was.	3
Macomber, Irwin J., Ithaca..Tompkins	6
Many, P. M., Livingston Manor...Sul.	1
Maplecroft Farms, Pawling..Dutchess	50
Marshall, Wm. S., Moravia....Cayuga	3
Martin, Frank F., Lisbon..St. Lawrence	1
Matheson, W. J., Huntington..Suffolk	13
Mead, Herbert, Estate, Lake Waccabuc .... Westchester	9
Meade, W. P., & Son, Jamestown.Cha.	4
Meadowsweet Farms, Peekskill...Wes.	2
Mekeel, W. & I., Jacksonville..Tompkins	35
Meloy, Charles T., Richford.....Tioga	5
Merritt, Douglas, Rhinebeck..Dutchess	10
Mertz, George I., Palmyra......Wayne	1
Miner, Ira E., Shavertown...Delaware	6
Mitchell, Albert A., Palmyra...Wayne	18
Mitchell, Arthur L., E. Aurora...Erie	15
Moore, Edward, Albany.......Albany	5
Morgan, F. D., Earlville......Madison	1
Morehouse, A. F., Fulton.....Oswego	1
Morhous, Dell, Willsboro.......Essex	†4
Morris, Robert, Lincoln........Wayne	10
Morrow, Charles, Pavilion....Genesee	3
Morse, J. Grant, Hamilton...Madison	43
Mosher, Chas. P., Auburn.....Cayuga	†8
Mosher, E. W., Aurora........Cayuga	51
Moss, Judson C., Durham......Greene	6
Musgrave, G. H., Johnstown...Fulton	2
Myers, H. W., Lisbon....St. Lawrence	†17
Neal, Geo. S., Little Valley, R. D. 1, Cattaraugus	3
Nelson, E. J., Little Falls...Herkimer	4
New York Agricultural Experiment Station, Geneva ....Ontario	29
New York State School of Agriculture, Morrisville .... Madison	2
Nichol, Alex. M., Walton....Delaware	3
Nichol, James A., Walton...Delaware	25
Nichols, A. E., & Sons, Java.....Wyo.	1
Niles, E. S., Oneonta, R. D. 2...Otsego	10
Noble, H. M., Bath..........Steuben	34
Norton, E. B., Hartford...Washington	23
Ormrod, Wm. L., Churchville..Monroe	12
Osborne, Wm. H. H., LeRoy...Genesee	†6
Osgood, T. C., Trumansburg..Tompkins	8
Packer, E. H., Portlandville....Otsego	18
Paddock, Mrs. M. L., Malone..Franklin	†8
Paddock, W. H., Freehold......Greene	1
Page, Mrs. W. C., Palmyra.....Wayne	1
Palmer, Oliver, Catskill.......Greene	14
Parker, James S., Salem...Washington	13
Parmelee, John M., Dayton......Cat.	1
Peer, George E., Chili Station..Monroe	25
Per, James A., Cape Vincent......Jef.	2
Perry Bros., Homer..........Cortland	17
Peters, Samuel T., Islip.......Suffolk	20
Phillips, B. F., & Sons, E. Bloomfield, Ontario	6
Phillips, Clayton M., Cattaraugus..Cat.	5
Phipps, Henry C., Roslyn......Nassau	6
Pine, J. K. P., Troy.......Rensselaer	58
Pinney, Frank H., Stafford....Genesee	7
Pinney, G. F., Union.........Broome	7
Pitkin, J. P., Friendship.....Allegany	..
Plaisted, R. A., & Son, Penn Yan..Yat.	15
Platt, W. Popham, White Plains..Wes.	12
Porteus, Chas., Lisbon, R. D. 2..St. L.	2
Post, Clarence S., Auburn.....Cayuga	†7
Potter, Alton O., Franklin...Delaware	4
Potter, Blanche, Ossining.........Wes.	2
Pratt, Chas., Estate, Glen Cove...Nas.	48
Pratt, Wm. B., Prattsburg....Steuben	4
Price, Geo. B., Batavia.......Genesee	15
Prime, Geo. R., Treadwell...Delaware	2
Purves, T. W., Lisbon....St. Lawrence	89
Quinby, John G., Brewster....Putnam	2
Ralph, Geo. J., Akron...........Erie	2
Randall, F. B., Mt. Sinai......Suffolk	10
Rathbun, L. D., Canisteo.....Steuben	3
Raymond, I. R., Cassadaga.......Cha.	84
Read, N. M., E. Pembroke....Genesee	40
Read, W. A., Purchase....Westchester	1
Reader, Charles, Clinton........Oneida	7
Reynolds, John J., Macedon....Wayne	3
Rhind, Duncan, Canandaigua..Ontario	2
Rice, C. B., Oswego...........Oswego	31
Rice, Irving F., Cortland....Cortland	†2
Rich, Adelbert P., Auburn.....Cayuga	1
Rich, Thomas, Hobart......Delaware	5
Ridley, Horace, Ithaca......Tompkins	1
Ritter, Geo. H., Edmeston......Otsego	1
Rives, Reginald W., New Hamburg, Dutchess	12
Roberts, Edward, & Sons, Clinton..Oni.	1
Roberts, Geo. V., & Son, Port Byron, Cayuga	24
Robertson, H. H., Munford....Monroe	4
Robertson, James H., Greenwich..Was.	6
Robertson, Wm. B. C., Mohawk...Her.	..
Robinson, D. R., Fishkill Plains...Dut.	14
Robinson, Geo. B., Bedford Hills..Wes.	†13
Robson, Alex., Lisbon....St. Lawrence	2
Robson, Wm., Lisbon.....St. Lawrence	†16
Rockefeller, Wm., Tarrytown.....Wes.	80
Rockwell, A. C., Garrattsville..Otsego	10
Rose, O. D., W. Winfield....Herkimer	†2
Ross, Geo. B., Union.........Broome	14
Ross, H. D., & Sons, Lowville..Lewis	5
Royce, C. M., Berkshire.........Tioga	2
Ruehle, Otto, Pleasant Valley....Dut.	2
Ruff, W. L., Bovina.........Delaware	70
Rutherford, Robert, Lisbon.....St. L.	†25
Ryerson, Harry, Tappan.....Rockland	3
Sanborn, W. B., Hamilton....Madison	2
Sanford, Geo. W., Margaretville...Del.	9
Santee, E. M., Cortland......Cortland	7
Sayer, Fred M., Chester.......Orange	1
Schubert, Adolph, Olean..Cattaraugus	†12
Schuppenhauer, Joe, Little Valley..Cat.	1
Schuyler, James E., Cobleskill....Sco.	1
Scofield, Leroy W., Freehold...Greene	6
Scott, D. T., Walton........Delaware	..
Seely, Frank, West Park.......Ulster	4
Selleck, W. R., Huntington....Suffolk	14
Sellen, N. R., Genoa..........Cayuga	3
Servey, Lee W., Watertown..Jefferson	3
Sessions, Frank C., Oneonta...Otsego	12
Shear, J. B., Putnam.....Washington	1
Sheldon, Ernest, Lisbon..St. Lawrence	1
Sheldon, I. L., Ellenburg Depot....Cli.	9
Shelton, Dr. Geo. G., Ridgefield...Conn.	20
Sherman, Arthur K., Java Village, Wyoming	1

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† Including pure-bred, not registered.

Sherman, Geo. D., Port Henry...Essex	8
Sherwood, B. W., Jamesville.....Ono.	6
Sholes, Geo. S., Sherburne...Chenango	2
Shourds, D. S., Macedon.......Wayne	8
Signor, E. H., Ithaca.......Tompkins	†8
Simmons, Foster, Edmeston....Otsego	7
Simmons, Ralph W., Canandaigua, Ontario	5
Simpson, Wm., Cuba........Allegany	60
Sisson, Geo. W., Jr., Potsdam...St. L.	100
Skidmore, J. W., Pleasant Valley..Dut.	1
Skillman, Frank, Rexville.....Steuben	7
Slafter, Carlos L., Belmont...Allegany	3
Sloane, Wm., Mt. Kisco...Westchester	17
Slocum, B. W., Geneva.......Ontario	1
Smallwood, Clarence A., Warsaw..Wyo.	6
Smallwood, W. W., & Son, Warsaw, Wyoming	12
Smith, Allen V., Marcellus Falls..Ono.	5
Smith, A. W., Union Springs..Cayuga	10
Smith, Frank Sullivan, Angelica..Alg.	3
Smith, Geo. W., Friendship..Allegany	3
Smith, Leonard, Bloomville..Delaware	60
Smith, Omar, Lakemont ....Yates	2
Smith, O. D., & Son, Shavertown..Del.	2
Snow, Jesse F., W. Stephentown..Ren.	8
Southard, Floyd, Ira.........Cayuga	2
Speed, Robert L, Slaterville Springs, Tompkins	12
Speer, Otis J., Lisbon....St. Lawrence	†16
Spencer, C. W., New Lebanon.....Col.	14
Spooner, M. L., Penn Yan......Yates	†4
Stacey, J. Geo., Waterloo......Seneca	2
Stafford, A. C., Gowanda..Cattaraugus	4
Stage, Frank M., Akron..........Erie	1
Starr, J. K., Fredonia....Chautauqua	†1
State Department of Agriculture, Albany .... Albany	71
Stevens, D. R., Bergen.......Genesee	11
Stone, C. A., Canton, R. D. 5....St. L.	12
Story, Charles H., Catskill.....Greene	15
Story, R. T., Freehold.........Greene	23
Strahon, S. B., Friendship...Allegany	1
Strivings, S. L., Castile.....Wyoming	7
Strong, Horace, Cornwallville..Greene	6
Strong, Selah B., Setauket......Suffolk	3
Sutcliffe Bros., Eaton........Madison	23
Sweet, George H., E. Aurora.....Erie	50
Tallcott, Geo. M., Skaneateles....Ono.	6
Talmage, Mary A., Martville...Cayuga	3
Talmage, S. C. M., East Hampton..Suf.	4
Terybery, Peter, Hector......Schuyler	3
Terybery, Thomas, Hector....Schuyler	2
Thayer, Geo. A., Cooperstown..Otsego	4
Thomson, Wm. S., Bovina Center..Del.	11
Thorne, Samuel, Millbrook...Dutchess	†25
Thorne, Wm. T., Skaneateles.....Ono.	8
Tiffany, Benton, Bristol Center...Ont.	2
Timmerman, Mrs. Sarah J., Orleans Four Corners ....Jefferson	7
Titus, C. G., W. Danby......Tompkins	5
Titus, E. L., Sidney Center..Delaware	3
Tomezak, Geo. W., West Falls....Erie	2
Tousey, C. G., Clinton Corners....Dut.	36
Townsend, Geo. J., Palmyra....Wayne	1
Townsend, R. H., Trumansburg...Tom.	2
Townsend, Stanton, Friendship....Alg.	1
Tozer, H. H., Naples.........Ontario	10
Tozer, John, Naples..........Ontario	2
Trudo, Wm., Altona..........Clinton	17
Tryon, Howard, Auburn.......Cayuga	7
Tucker, John, Skaneateles...Onondaga	5
Turnbull, Richard, & Son, Garattsville, Otsego	†4
Tuthill, Frank H., Rocky Point...Suf.	4
Tuttle, W. E., Nunda......Livingston	12
Tweedie, A. B., Walton......Delaware	14
Vance, William T., Willow Creek..Tom.	6
Vanderbilt, Fred'k W., Hyde Park..Dut.	11

Vanderbilt, Ronaldo, Lyons.....Wayne	†11
Van Marter, E. J., Groton...Tompkins	†8
Van Patten, C., Union........Broome	16
Vary, Arthur S., Ava.........Oneida	1
Velasco & Co., 128 Water St., New York ....New York	18
Verplanck, B. R., Fishkill-on-Hudson, Dutchess	4
Wade, Arthur C., Jamestown.....Cha.	78
Walker, Ernest B., Ph. G., Williamsville .... Erie	8
Wallace, Geo. W., Canandaigua, R. D. 2, Ontario	9
Walldorff, Henry, Dunkirk.Chautauqua	4
Ward, E. F., Trumansburg.....Seneca	5
Ward, John G., Dormansville..Albany	†17
Ward, Walter E., Albany......Albany	26
Wardwell, Henry L., Springfield Center, Otsego	40
Warner, H. B., Angelica.....Allegany	4
Wasserman, J., Mahopac.....Putnam	6
Watson, Geo. M., Scio.......Allegany	1
Wayne, Joseph, Riverdale...New York	3
Weaver, John G., & Son, Clark Mills, Oneida	8
Webster, C. M., Wyoming....Wyoming	..
Webster, P. A., Cazenovia....Madison	1
Wendt, W. F., Lockport......Niagara	..
Wheaton, W. E., Naples......Ontario	7
Wheeler, Frederic R., Lockport...Nia.	15
Whitbeck, Cornelius, Craryville...Col.	20
White, Geo. C., Hopewell Jct..Dutchess	4
White, John F., Co., Mt. Morris..Liv.	200
Whitford, Wm. S., Brookfield..Madison	2
Whitney, Payne, Manhasset....Nassau	20
Whitney, W. B., Gouverneur....St. L.	1
Whittemore, A. C., Fulton....Oswego	15
Widmer, Oscar R., Wappingers Falls, Dutchess	8
Wilbur, Isaac, Wells Bridge....Otsego	1
Wilcox, Clarence, Bergen .....Genesee	1
Wilcox, C. Marvin, Delhi.....Delaware	1
Wilcox, M. S., Jefferson.....Schoharie	15
Wilcox, Spencer, Bergen......Genesee	10
Williams, Amos, Merrick .....Nassau	8
Williams, Aug. H., La Salle..Niagara	†14
Williams, Jacob, Roosevelt ....Nassau	8
Williams, Stanley, Knox ......Albany	4
Wilsey, C. E., Selkirk.........Albany	2
Wilson, James, Schenevus .....Otsego	3
Wilson, J. V., 740 Atlantic Ave., Brooklyn .... Kings	23
Wilson, Van E., Delhi.......Delaware	6
Winters, Byram L., Smithboro..Tioga	22
Witter, Wm. H., Stanley......Ontario	†16
Wolcott, C. B., Falconer..Chautauqua	1
Wood, Oscar B., Spencerport..Monroe	2
Wood, O. W., Auburn.........Cayuga	4
Worthing, R. B., Norwood......St. L.	†10
Wright, Arthur D., Slaterville Springs, Tompkins	3
Wyman, Mary R., Crown Point..Essex	1
Wynkoop, Bradley, Canandaigua..Ont.	1
Yama-uchi Land Co., Napanoch..Ulster	7
Yaxley, Edward, Medina......Orleans	4
Young, D. F., Phoenix........Oswego	28
Young, John Alvin, Glen Cove..Nassau	1

JERSEY (Polled)

Dicks, Nichelas, Walton.....Delaware	17
Hillis, A. W., S. Worcester.....Otsego	5
Terpening, F. N., W. Oneonta..Otsego	22

NORMANDY

Harris, Clarence, Glens Falls...Warren	*20
Stevens, F. E., Glens Falls....Warren	*20

† Including pure-bred, not registered. * Part ownership.

RED POLLED

Red Polled Cattle Club of America,
H. A. Martin, Sec'y.,
Gotham, Wis.

Adams, E. J., Adams Basin	Monroe	16
Arnold, A. D., Pawling	Dutchess	15
Calman, M., & Son, Canandaigua	Ont.	5
Faulkner, Jay H., Amsterdam	Mtg.	..
Hamilton, E. C., Richville	St. L.	15
Hathaway, B. L., Alpine	Schuyler	12
Messer, W. B., Voorheesville	Albany	2
Meyers, C. G., Troy	Rensselaer	6
Myers, Morgan S., Barnerville	Schoharie	25
Parker, Alton B., Esopus	Ulster	28
Peterson, C. E., Jamestown	Cha.	16
Rifenbark, L. E., E. Masonville	Del.	6
Sawyer, L. N., Big Flats	Chemung	3
Sears, J. M., & Son, Berkshire	Tioga	8
Stevens, Charley, Knowlesville	Orl.	†4
Stoddard, O. J., & Son, Jamestown	Cha.	13
Terpenning, F. N., W. Oneonta	Otsego	6

SHORT-HORN

American Short-Horn Breeders' Association,
John W. Groves, Sec'y.,
Chicago, Ill.

Aldrich, G. E., Mattituck	Suffolk	6
Ayres, H. W., Jamestown	Chautauqua	14
Beadle, Walter D., LeRoy	Genesee	7
Beal, Catharine, E. Palmyra	Wayne	2
Bell, Mrs. Ida A., Rome	Oneida	3
Bennett, R. P., Springfield Center	Ots.	1
Blaker, Joseph, Mumford	Monroe	4
Boak, John W., Jamestown	Chautauqua	15
Boyd. T. N., Andover	Allegany	29
Brown, Eugene D., Scottsville	Monroe	9
Brundage, Lewis J., Dundee	Yates	6
Burnette, F. H., Phelps	Ontario	1
Cale, J. B., Jamestown, R. D. 79	Cha.	4
Collins, Cornelius, Taughannock Falls,	Tompkins	2
Cornell University, Ithaca	Tompkins	9
Cottrell Bros., Hoosick Falls	Ren.	30
Cottrell, Case, Hoosick Falls	Ren.	4
Cottrell, Jay C., Hoosick Falls	Ren.	10
Cox, Huron A., Wyoming	Wyoming	8
Cox, S. P., Wyoming	Wyoming	2
Crandall, John M., Jamestown, R. D. 83	Chautauqua	5
Cunningham, N. R., Greenville	Alb.	7
Dick, Thomas, Churchville	Monroe	1
Dwyer & Sons, No. Bangor	Franklin	17
Englehart, Geo. L., Ballston Spa	Sar.	7
Freeman, J. L., Mumford	Monroe	1
Frost, George A., Montour Falls	Scu.	5
Garbutt, W. H., Scottsville	Monroe	7
Gibbs, D. Z., Wheeler	Steuben	12
Gilbert, A., Kennedy	Chautauqua	11
Graham, J. D., Putnam Station	Was.	1
Green, Frank, Schenevus	Otsego	6
Griggs, James A., & Son, Springfield,	Otsego	18
Haight, Henry J., Dover Plains	Dut.	15
Hall, Miller, Alpine	Schuyler	6
Hamilton, E. C., Richville	St. Lawrence	5
Hardie Bros., Roscoe	Sullivan	6
Hathaway, W. S., Otego	Otsego	9
Hawkins, W. G., Spencerport	Monroe	18
Johnson, Andrew, Jamestown, R. D. 80,	Chautauqua	6
Ladiler, Thomas, Oaksville	Otsego	1
Lee, M. R., Canandaigua	Ontario	5
Letts Bros., Lawyersville	Schoharie	2
Lewis, B. W., Ashville	Chautauqua	10
Lewis, F. S., Ashville	Chautauqua	9
Lincoln, Marshall T., Naples	Ontario	†9
Mellen, C. R., Geneva	Ontario	4
Miller, Geo. W., & Chas. P., So. Byron,	Genesee	2
Miller, Wm. B., Clifton	Monroe	4
Miner, W. H., Chazy	Clinton	55
Near Bros., Jamestown, R. D. 75	Cha.	12
Near, H. L., Jamestown	Chautauqua	10
Near, John, Jamestown	Chautauqua	7
Norris, E. B., Sodus	Wayne	4
O'Brien, Thos., Ellisburg	Jefferson	10
Osterhout, D. H., & Son, Lawyersville,	Schoharie	†25
Ostrander, R. C., Knowlesville	Orleans	1
Ovenshire, Guy G., Beaver Dams	Stu.	3
Palmer, John S., Jamestown	Cha.	†20
Pixley, Fred, Franklinville	Cat.	1
Place, Chas. A., Caledonia	Livingston	1
Poelma Bros., Albion	Orleans	1
Powers, Ed. L., Ashville	Chautauqua	10
Rider, H. K., Estate, Malone	Franklin	12
Roberts, H. Guy, Oaksville	Otsego	11
Roeper, Wm. H., Wyoming	Wyoming	1
Russell, William, Ballston Spa	Sar.	3
Sage, Fenton L., Seeley Creek	Chemung	5
Scribner, W. L., Schoharie	Schoharie	25
Searl, Lucien H., Franklinville	Cat.	†1
Sears, J. M., & Son, Berkshire	Tioga	15
Selleck, W. R., Huntington	Suffolk	21
Slocum, A. B., Kings Ferry	Cayuga	†1
Smiley, F. D., Ithaca	Tompkins	1
Smith, F. N., Kanona	Steuben	5
Spears, Nelson R., Middleport	Niagara	†8
Stannard, Frank, Elmira	Chemung	14
Stearns, Geo. T., Palmyra	Wayne	20
Stevenson, Robert A., Greenwich	Was.	21
Steves, Grant, Ashville	Chautauqua	16
Sutton, Wm. E., Windham	Greene	31
Taylor, L. H., Kennedy	Chautauqua	†6
Titus, E. L., Sidney Center	Delaware	5
Trewer, J. T., Mt. Morris	Livingston	10
Van Buskirk, E. H., Milford	Otsego	1
Van Norden, T. L., So. Salem	Wes.	16
Van Slyke, A., Bath	Steuben	†9
Vaughn, Reynolds E., Hudson Falls,	Washington	12
Velasco & Co., 128 Water St., New York,	New York	20
Vredenburgh, Shaffer, Bearsville	Ulster	1
Webster, C. M., Wyoming	Wyoming	..
Wheeler, S. J., Kennedy	Chautauqua	13
Whiteman, C. A., Jasper	Steuben	5
Whiteman, John C., Jasper	Steuben	5
Williams, Edson, Newark Valley	Tioga	2
Williams, John R., Ovid	Seneca	11
Young, Geo. A., Churchville	Monroe	2

Dairy Short-Horns

Avery, Horace W., King Ferry	Cayuga	52
Davison, G. Howard, Millbrook	Dut.	5
Easterbrook, Edwin, Corning	Steuben	4
Fisher, J. C., & Son, Madrid	St. L.	15
Prince, A. H., Montour Falls	Schuyler	9
Robie, Chas. H., & Son, Savona	Stu.	25
Thomas, S. M., Franklinville	Cat.	†8
Trimble, C. K., Crown Point	Essex	1
Williams, Daniel C., Burlington Flats,	Otsego	9

POLLED DURHAM

The Polled Durham Breeders' Association,
J. H. Martz, Sec'y-Treas.,
Greenville, O.

Cox, Huron A., Wyoming	Wyoming	11
Hall, Miller, Alpine	Schuyler	12
Sinclair, D. J., Caledonia	Livingston	10
Stoddard, O. J., & Son, Jamestown,	Chautauqua	3
Tucker Bros., Scio	Allegany	6
Tucker, Fred N., Scio	Allegany	2
Williams, John R., Ovid	Seneca	2

† Including pure-bred, not registered.

SHEEP

BLACK-FACED HIGHLAND

Lamon, A., & Son, Central Bridge..Sco.	10
Powell, Wilson M., Jr., Old Chatham, Columbia	40
Townsend, D. H., & Sons, Lodi..Seneca	15

CHEVIOT

American Cheviot Sheep Society,
F. E. Dawley, Sec'y-Treas.,
Fayetteville, N. Y.

Alden, A. M., Freehold........Greene	5
Birdsall, Van D., Unadilla......Otsego	3
Brace, B. W., Albion..........Orleans	46
Brasted, D. L., Hornell.......Steuben	10
Burnside, E. D., Maryland......Otsego	7
Clancy, W. J., Alfred Station..Steuben	4
Curry, J. A., Hartwick.........Otsego	45
Daniels, F. A., Otego...........Otsego	10
Dawley, F. E., Fayetteville..Onondaga	91
Dawley, M. B., Fayetteville..Onondaga	20
Dicks, Nichelas, Walton.....Delaware	2
Dotshome Farms, Fayetteville.....Ono.	70
Eldredge, C. A., Palmyra.......Wayne	65
Fisher, J. C., & Son, Madrid.....St. L.	12
Fisk, D. E., Unadilla..........Otsego	4
Greene, Clifford E., Greene...Chenango	13
Gregory, D. M., Mt. Vision......Otsego	15
Hargrave, Joseph, Lisbon.St. Lawrence	8
Harper, H. W., No. Kortright.Delaware	19
Hathaway, B. L., Alpine.....Schuyler	25
Hill, V. Edgar, Stony Ford.....Orange	15
Lough, George, Hartwick.......Otsego	90
Lunn, John, Edmeston.........Otsego	8
McLaughlin, Edson, Unadilla....Otsego	22
Meade, W. P., & Son, Jamestown..Cha.	10
Risley, E. E., Walton........Delaware	11
Sherwood, B. W., Jamesville..Onondaga	2
Shriner, W., Hector..........Schuyler	13
Stewart, S. Dewitt, Kanona....Steuben	21
Tibbitts, A. J., R. D. 77, Jamestown, Chautauqua	5
Townsend, D. H., & Sons, Lodi..Seneca	20
Wagar, F. H., Middlesex........Yates	1
Wellman, M. I., Pavilion......Genesee	10
White, A. F., Hornell.........Steuben	30

COTSWOLD

American Cotswold Registry Association,
F. W. Harding, Sec'y-Treas.,
Waukesha, Wis.

Barton, J. C., Kanona........Steuben	2
Brizzee, E. T., Canandaigua...Ontario	23
Chick, John, Darien..........Genesee	30
Clark, E. A., & Sons, Greene.....Chn.	7
Dicks, Nichelas, Walton.....Delaware	3
Gilbert, A., Kennedy.....Chautauqua	15
Lewis, F. S., Ashville.....Chautauqua	15
Reed, Mrs. L. E., Sinclairville....Cha.	13
Schwingle, Phil., Dansville.......Liv.	5
Scribner, W. L., Schoharie..Schoharie	18
Shaw, Jesse F., W. Stephentown..Ren.	14
Tempening, F. N., W. Oneonta..Otsego	28
Townsend, D. H., & Sons, Lodi..Seneca	25
Whitman, F. E., Moravia......Cayuga	1

DORSET

The Continental Dorset Club,
J. E. Wing, Sec'y-Treas.,
Mechanicsburg, O.

Aldrich, G. E., Mattituck......Suffolk	5
Allison's Island Farm, Waddington, St. Lawrence	25
Beckett, W. O., Knowlesville..Orleans	5
Beebe, E. P., & Son, Holley...Orleans	20
Blakeman, W. S., Clyde........Wayne	8
Bush, Seth J. T., Morton.....Orleans	21
Carnochan, G. M., New City..Rockland	100
Clark, Fred W., & Son..Wyoming, Wyoming	6
Colbert, L. M., & Sons, E. Chatham, Columbia	10
Cook, H. F., Sag Harbor......Suffolk	4
Cornell University, Ithaca...Tompkins	6
Cottrell, Jay C., Hoosick Falls...Ren.	4
Cronningshield, Stanley, Ticonderoga, Essex	1
Day, Wilmer J., Holley.......Orleans	3
Dicks, Nichelas, Walton.....Delaware	6
Elmtree Farm, Charlotte......Monroe	10
Everman, Albert J., Dansville....Liv.	1
Field, H. T., Oneida.........Madison	10
Fitch, Clifford B., Walton...Delaware	4
Gildersleeve, F. P., Union Springs, Cayuga	7
Glover, E. H., Clyde..........Wayne	1
Gregory, C. O., Mt. Vision.....Otsego	15
Hamsher, Chas. A., Dansville.....Liv.	2
Hanssener, Robert F., E. Chatham..Col.	12
Hargrave, Joseph, Lisbon.......St. L.	8
Hawley Stock Farms, Batavia....Gen.	4
Healy, A. A., Poughquag.....Dutchess	20
Hill, E. E., Knowlesville......Orleans	9
Horton, H. C., W. New Brighton..Ric.	3
Lake, John J., Cambridge..Washington	2
LaMont, George B., Albion....Orleans	2
Miner, W. H., Chazy..........Clinton	461
Moore, Edward, Albany.......Albany	3
Morton, L. P., Rhinecliff.....Dutchess	25
Newton, C. W., So. Colton......St. L.	5
Pattison, E. P., Mt. Morris.......Liv.	100
Peters, Samuel T., Islip.......Suffolk	30
Pratt, H. C., Canandaigua....Ontario	60
Rogers, Charles B., Clinton....Oneida	17
Rymph, James B., Salt Point....Dut.	1
Skutt, Asher C., Morton.......Monroe	4
Smith, A. H., Chappaqua..Westchester	9
Snyder Bros., Albion.........Orleans	1
Spooner, M. L., Penn Yan......Yates	†2
Steele, B. T., Heuvelton.......St. L.	5
Tarbell, Gage E., Smithville Flats, Chenango	1
Townsend, D. H., & Sons, Lodi..Seneca	20
Tucker, L. G., Scio..........Allegany	10
Vreeland, Mrs. G. W., Newark Valley, Tioga	1
Wanmer, Harry E., Greenwich...Was.	1
Warner, F. P., Canandaigua...Ontario	†50
Wendt, W. F., Lockport......Niagara	..
Williams, Edson, Newark Valley..Tioga	18

HAMPSHIRE-DOWN

American Hampshire Sheep Association,
Comfort A. Tyler, Sec'y.,
Coldwater, Mich.

Ball, Stephen L., Berkshire.....Tioga	2
Beckett, W. O., Knowlesville..Orleans	4
Bell, Clark, 39 Broadway, New York, New York	†30
Benham, E. M., & Sons, Canandaigua, Ontario	35
Bigelow, F. E., Whallonsburg...Essex	25
Bridge, Jay L., Oneida.......Madison	8
Broad, John H., Morrisville..Madison	6
Brown, Earl D., Ilion, R. D. 2....Her.	30
Burnham, F. W., Chiloway..Delaware	7
Chadwick, Allen, Albion......Orleans	6
Clark, Fred W., & Son, Wyoming.Wyo.	7
Colbert, E. J., E. Chatham..Columbia	4
Conine, F. B., Bath..........Steuben	30

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† Including pure-bred, not registered.

Cooley, Mrs. E. D., Rodman..Jefferson	28
Dearlove, J. L., Prattsburg...Steuben	6
DeWitt, J. M., Potter Hollow..Albany	2
Dicks, Nichelas, Walton.....Delaware	9
Dixon, Frank N., Hall........Ontario	5
Dunham, Norton, Plainville..Onondaga	2
Dunlap, W. Barlow, Amsterdam..Mtg.	94
Edwards, Alvin W., & Son, Rexville, Steuben	18
Ferris, Arthur J., Albion.....Orleans	80
Frost, C. L., Montour Falls..Schuyler	1
Fuller, D. H. & H. H., Scio..Allegany	55
Hale, William B., Rochester...Monroe	25
Halladay, Fletcher J., Jamestown..Cha.	†43
Haslett Bros., Seneca.........Ontario	58
Haslett, Dr. Jas. H., Phelps...Ontario	10
Haslett, Thomas, Seneca......Ontario	60
Hill, E. S., & Son, Freeville.....Tom.	40
House, John H., Richfield Spa....Her.	17
Hubbard, Robert F., Cazenovia...Mad.	21
Kelley, M. H., Wyoming.....Wyoming	6
Lawrence, W. D., Adams.....Jefferson	2
Mackey, Ivan O., Preston Hollow..Alb.	23
Mead, Henry D., Jamestown, R. D. 77, Chautauqua	20
Miller, Eli, Woodhull.........Steuben	62
Miller, Mrs. H. C., Deposit....Broome	12
New York State School of Agriculture, Morrisville .... Madison	8
Palmer, Artemas E., Belmont....Alg.	18
Pattridge, C. O., Perry......Wyoming	10
Peasley, Wallace A., Huntersland..Alb.	1
Porter, E. C., Sauquoit........Oneida	12
Porter, Fred L., Crown Point...Essex	38
Powell, W. H., Freehold.......Greene	7
Pratt, C. B., Chatham......Columbia	10
Putnam, Aaron, Prattsburg...Steuben	6
Reid, Whitelaw, Purchase..Westchester	150
Risley, E. E., Walton.......Delaware	17
Robinson, Garrett, Richfield Spa..Ots.	1
Robson Bros., Hall ....Ontario	45
Rupert, W. P., & Son, Seneca....Ont.	40
Schriver, Andrew, Chester.....Orange	50
Selleck, W. R., Huntington....Suffolk	17
Sisson, Milton B., Almond....Allegany	58
Smallwood, Clarence A., Warsaw.Wyo.	78
Smallwood, W. W., & Son, Warsaw, Wyoming	65
Snow, Sargent F., Syracuse......Ono.	150
Southworth, Johnnie, No. Bangor..Fr.	4
Story, Charles H., Catskill....Greene	1
Story, John W., Freehold......Greene	18
Tarbell, Gage E., Smithville Flats, Chenango	1
Tucker Bros., Scio..........Allegany	40
Tucker, Fred N., Scio.......Allegany	38
Tucker, L. G., Scio..........Allegany	30
Turner, Mrs. Warren, Franklinton..Sco.	20
Wheeler, Henry, Kanona......Steuben	2
White, A. F., Hornell.........Steuben	10
White, J. L., Locke...........Cayuga	5
Whitney, J. C., Red Creek......Wayne	..
Wicks, Alfred L., Fishkill....Dutchess	..
Wilbur, O. B., Greenwich..Washington	4
Witter, E. H., Cuba.........Allegany	5

LEICESTER

American Leicester Breeders' Association,
A. J. Temple, Sec'y.,
Cameron, Ill.

Carman, C. Owen, Trumansburg..Tom.	4
Clark, E. A., & Sons, Greene, R. D. 3, Chenango	11
Dwyer & Sons, N. Bangor....Franklin	20
Gregory, C. O., Mt. Vision.....Otsego	13
Hargrave, Joseph, Lisbon......St. L.	7
Karker, A. J., Cobleskill....Schoharie	14
Robinson, Robert, Bath.......Steuben	10
Snow, Jesse F., W. Stephentown..Ren.	18
Terpening, F. N., W. Oneonta..Otsego	10
Wagar, Fenton, Naples.........Yates	4
Wagar, F. H., Middlesex........Yates	5
Will, John, Ft. Covington....Franklin	20

LINCOLN

National Lincoln Sheep Breeders' Association,

Bert Smith, Sec'y-Treas.,
Charlotte, Mich.

Barton, Wm. H., Central Bridge..Sco.	18
Beckett, W. O., Knowlesville..Orleans	11
Benedict, Frederick E., LaGrangeville, Dutchess	1
Bentley, E. A., Wellsville....Allegany	14
Bentley, Eva E., Wellsville...Allegany	1
Colligan, E. J., Watertown...Jefferson	14
Criddle, Chas., Nunda......Livingston	3
Dicks, Nichelas, Walton.....Delaware	2
Dodge, B. J., Verona..........Oneida	5
Fletcher, C. L., Dover Plains..Dutchess	2
Gilbert, A., Kennedy......Chautauqua	10
Gregory, C. O., Mt. Vision.....Otsego	14
Lewis, F. S., Ashville.....Chautauqua	9
McLaughlin, D. L., Tacoma..Delaware	5
Miller, Mrs. H. C., Deposit....Broome	125
Peabody, George L., Springwater..Liv.	10
Pratt, C. B., Chatham......Columbia	6
Selleck, W. R., Huntington....Suffolk	12
Sheldon, Albro W., Wingdale..Dutchess	12
Terpening, F. N., W. Oneonta..Otsego	12
Townsend, D. H., & Sons, Lodi..Seneca	20

MERINO (American)

Vermont, New York and Ohio Merino Sheep Breeders' Association,
Wesley Bishop, Sec'y.,
R. D. 1, Delaware, O.

Barker, Clarence W., 58 Thurston Ave., Ithaca .... Tompkins	7
Bell, David K., Rochester, R. D. 2..Moe.	41
Gregory, Frank L., Mt. Vision..Otsego	32
Meade, W. P., & Son, Jamestown..Cha.	20
Tryon, Howard, Auburn.......Cayuga	75
Wallace, George, Savona ....Steuben	..
Wellman, C. V., & Sons, Perry..Wyo.	50
Whitney, J. C., Red Creek....Wayne	..
Whittle, C. M., Hoosick Falls...Rens.	55

American Delaine-Merino Record Association,

S. M. Cleaver, Sec'y.,
Delaware, O.

Clark, Fred W., & Son, Wyoming..Wyo.	15
Wallace Bros., Savona.......Steuben	†112
Wellman, C. V., & Sons, Perry...Wyo.	50

MERINO (Delaine)

Dickinson Merino Sheep Record Company,
Beulah McDowell Miller, Sec'y.,
Canton, O.

Bell, David K., Rochester, R. D. 2.Moe.	6
Benson, C. F., Groton.......Tompkins	†1
Carman, C. Owen, Trumansburg..Tom.	9
Diez, John A., Wilson........Niagara	60
Fisher, Robert B., Cambridge.....Was.	200
Hill, E. S., & Son, Freeville..Tompkins	30
Hunt, W. E., Clarence............Erie	400
Light, C. A., Morris............Otsego	3
McPherson, J. N., Scottsville...Monroe	20
Meade, W. P., & Son, Jamestown..Cha.	20
Mitcham, Bert, Medina........Orleans	11

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† Including pure-bred, not registered.

Mitchane, Bert, Albion	Orleans	11
Roble, Chas. H., & Son, Savona	Steuben	4
Sisson, H. T., & H. C., Crown Point Center	Essex	1
Weatherby, J. C., Trumansburg	Tom.	100
Webster, F. M., Warsaw	Wyoming	20

MERINO (Rambouillet)

American Rambouillet Sheep Breeders' Association,

Dwight Lincoln, Sec'y.,
Milford Center, O.

Adams, E. J., Adams Basin	Monroe	1
Anderson, Allan B., Linwood	Liv.	62
Braley, B. B., Albion	Orleans	1
Chadwick, Allen, Albion	Orleans	1
Clark, Fred W., & Son, Wyoming	Wyo.	35
Cornell University, Ithaca	Tompkins	13
Gregory, Frank L., Mt. Vision	Otsego	21
Halliday, C. W., No. Chatham	Col.	3
Hayden, Wm., & Son, McDonough	Chn.	2
Hiserodt, William, Red Creek	Wayne	30
Lamoree, John B., E. Chatham	Col.	5
MacNaughton, John, Caledonia	Liv.	25
Markham & Puffer, Avon	Livingston	200
Mather, Wm. A., Adams	Jefferson	100
New York State School of Agriculture, Morrisville	Madison	3
Ostrander, R. C., Knowlesville	Orleans	15
Plue, C. D., Basom	Genesee	45
Sherman, H. P., Alfred Station	Alg.	4
Shriner, W., Hector	Schuyler	4
Stuart, B. C., & Frank H., Springwater,	Livingston	2
Townsend, D. H., & Sons, Lodi	Seneca	70
Wagar, Fenton, Naples	Yates	26
Wagar, F. H.., Middlesex	Yates	30
Webster, F. M., Warsaw	Wyoming	6
Wellman, C. V., & Sons, Perry	Wyo.	80
Wright, B. F., Ransomville	Niagara	1

MERINO (Spanish)

Ostrander, M. C., Hoosick Falls	Ren.	27
Whittle, C. M., Hoosick Falls	Ren.	10

OXFORD-DOWN

American Oxford-Down Record Association,
W. A. Shafer, Sec'y.,
Hamilton, O.

Barton, J. C., Kanona	Steuben	3
Bennett, R. P., Springfield Center	Ots.	53
Breitwieser, L., Angelica	Allegany	10
Chase, M. S., Rexville	Steuben	1
Clark, Fred W., & Son, Wyoming	Wyo.	10
Clinton, James D., Modena	Ulster	7
Colbert, E. J., E. Chatham	Columbia	4
Colby, Wm. W., Spencerport	Monroe	7
Conklin, James N., Tuscarora	Liv.	1
Cook, Arthur M., Canandaigua	Ontario	4
Craft, A. J., Darien Center	Genesee	25
Crary, W. R., Liberty	Sullivan	1
Criddle, Chas., Nunda	Livingston	39
Curtis, Frank, Fillmore	Allegany	1
Dennis, R. W., Jasper	Steuben	2
Denton, F. A., Wingdale	Dutchess	3
Eldridge, Thos., Springwater	Liv.	35
Farley, Luther E., Phelps	Ontario	11
Francis, R. H., Honeoye	Ontario	8
Gillis, H. R., Victor	Ontaria	63
Hathaway, A. B., Mertensia	Ontario	40
Hess, Chas. E., Phoenix	Oswego	12
Hill, E. S., & Son, Freeville	Tompkins	17
Hoose, Wellington M., Vintonton	Sco.	16
Latimer, F. H., Arkport	Steuben	14
Lyon, W. H., Chaseville	Otsego	4
McLaughlin, Edson, Unadilla	Otsego	7
McNair, H. R., Dansville	Livingston	1
Marsh, T. A., Valois	Schuyler	6
Ostrander, R. C., Knowlesville	Orleans	3
Peabody, George L., Springwater	Liv.	8
Perry, Louis H., Clay	Onondaga	4
Pratt, C. B., Chatham	Columbia	12
Pratt, J. S., Knowlesville	Orleans	17
Prentice, W. F., Jasper	Steuben	2
Preston & Mingus, Andover	Allegany	30
Risley, E. E., Walton	Delaware	13
Ross, Richard O., Corfu	Genesee	10
Schmitt, George F., No. Branch	Sul.	30
Schwingel, Phil, Dansville	Livingston	6
Shelt, W. F., Byron	Genesee	15
Sisson, C. L., Almond	Allegany	8
Slocum, B. W., Geneva	Ontario	1
Smith, H. C., Kent	Orleans	2
Spooner, M. L., Penn Yan	Yates	1
Stewart, S. Dewitt, Kanona	Steuben	5
Story, R. T., Freehold	Greene	2
Tilbury, H. S., Union	Broome	15
Toby, W. A., Lindley	Steuben	5
Wagar, Fenton, Naples, R. D.	Yates	13
Wagar, F. H., Middlesex	Yates	16
Warren, C. E., Bergen	Genesee	8
Whitney, J. C., Red Creek	Wayne	..
Wright, M. M., Lamson	Onondaga	†35
Wyeth, Madison J., Lowville	Lewis	5
Wylie, Guy D., Harpersville	Broome	1
Yaxley, Edward, Medina	Orleans	1
Zeh, Stephen L., Schoharie	Sco.	20

SHROPSHIRE

American Shropshire Registry Association,
J. M. Wade, Sec'y-Treas.,
LaFayette, Ind.

Alden, A. M., Freehold	Greene	11
Alexander, Ray H., Union Springs	Cay.	4
Atwater, Chester, Olean	Cattaraugus	45
Barker, E. B., Crown Point	Essex	3
Barmore, Clark, LaGrangeville	Dut.	40
Barnes, C. E., Oxford	Chenango	10
Barton, J. C., Kanona	Steuben	30
Beal, Catharine, E. Palmyra	Wayne	†41
Beckley, M. D., Hartwick	Otsego	39
Benham, E. M., & Sons, Canandaigua,	Ontario	5
Bennett, Bert, Hornell	Steuben	10
Benson, C. F., Groton	Tompkins	†1
Black, W. F., Hall	Ontario	92
Blewer, Fred A., Owego	Tioga	85
Boldt, G. C., Alexandria Bay	Jef.	70
Bonn, G. W., Springwater	Livingston	1
Bowen, Guy S., Holley, R. D. 2	Orl.	35
Bowen, Mrs. Ida, Holley	Orleans	1
Bower, LeRoy C., Ludlowville	Tom.	9
Braith, J. V. D. H., Jerusalem	Alb.	†50
Buell, Ely, Irondequoit	Monroe	†21
BurgDorf, A. C., Geneva, R. D. 4	Sen.	17
Burnette, F. H., Phelps	Ontario	6
Busch, Adolphus, Cooperstown	Otsego	9
Butts, Geo. W., Fulton	Oswego	5
Carrier, Jesse I., Fulton	Oswego	60
Caswell, Guy C., Randolph	Cat.	14
Clark, F. Ambrose, Cooperstown	Ots.	160
Clinton, James D., Modena	Ulster	3
Cochran, Gifferd A., Mt. Kisco	Wes.	1
Colbert, E. J., E. Chatham	Columbia	24
Colbert, L. M., & Sons, E. Chatham,	Columbia	35
Cole, Marc W., Albion	Orleans	40
Colligan, E. J., Watertown	Jefferson	15
Cooley, A. H., Little Britain	Orange	10
Cornell University, Ithaca	Tompkins	10
Cotton, Geo. I., Friendship	Allegany	16
Cotton, J. C., Almond	Allegany	30
Cottrell, Jay C., Hoosick Falls	Ren.	6
Covert, H. B., Lodi	Seneca	70

† Including pure-bred, not registered.

Cowdin, John E., E. Norwich	Nassau	25
Cowdin, Winthrop, Mt. Kisco	Wes.	32
Craig, John, Delhi	Delaware	5
Cuthbert, W. L., Hammond	St. L.	35
Davis, Arthur S., Chili Station	Mon.	80
Dicks, Nichelas, Walton	Delaware	6
Dorn, Fred E., Brookton	Tompkins	40
Dunham Brothers, Bainbridge	Chn.	40
Dunlap, W. Barlow, Amsterdam	Mtg.	146
Dunmore, Harry M., Binghamton	Brm.	65
Dunn, A. C., Hastings	Oswego	1
Dwight, W. H., So. Otselic	Chn.	1
Eggleston, R. W., Wadhams	Essex	30
Fairbanks, O. W., Kennedy, R. D.	Cha.	30
Farrant, Earl P., So. Byron	Gen.	8
Ferris, Geo. L., Atwater	Cayuga	6
Field, Augustus B., Sterlington	Roc.	20
Follett, A. M., Olean, R. D. 2	Cat.	4
Fowler, Northrup, Amenia	Dutchess	1
Foxton, H. C., Syracuse	Onondaga	200
Freestone, Thomas B., Interlaken	Sen.	16
Frutchey, P. G., So. Livonia	Liv.	60
Gay, E. T., Attica	Wyoming	135
Gibson, Jesse, So. Hartford	Was.	10
Giles, C. T., Apalachin	Tioga	65
Giles, Frank, Forestville	Chautauqua	10
Godeffroy, A. E., Godeffroy	Orange	161
Goslee, H. H., & Son, Oneida	Madison	60
Greene, F. J., Center Berlin	Ren.	6
Gregory, C. O., Mt. Vision	Otsego	4
Gridley, M. J., Alfred Station	Alg.	27
Hall, F. S., Lewiston	Niagara	†13
Hansel, Frank L., Winfield	Herkimer	54
Harpending, H. C. & H. B., Dundee,	Yates	10
Harris, Chas. L. & Geo. H., Penfield,	Monroe	7
Hart, Will J., York	Livingston	1
Hartman, John W., Chatham	Col.	18
Haswell, W. W., Hoosick	Ren.	60
Hathaway, W. S., Otego	Otsego	20
Hayden, Wm., & Son, McDonough	Chn.	15
Herber, John, Delmar	Albany	2
Herring, M. A., Moscow	Livingston	21
Hess, Clarence D., Pennellville	Osw.	16
Hill, E. E., Knowlesville	Orleans	60
Hollister, Raymond H., Slaterville Springs	Tompkins	6
Holmwood, Mason H., Orchard Park,	Erie	58
House, John H., Richfield Springs	Her.	16
Houston, James J., Middletown	Ora.	16
Huyck, E. N., Rensselaerville	Albany	36
Jenney, A. D., Syracuse	Onondaga	1
Johncox, George, Darien Center	Gen.	7
Johnson, Howard H., Burdett	Scu.	19
Katonah Wood Farm, Katonah	Wes.	20
Laidlaw, Robert, Franklinville	Cat.	1
Lawton, E. J., Norwich	Chenango	1
Leathersich, Mrs. L., Caledonia	Liv.	45
Lewis, Mrs. Katherine B., Geneva	Ont.	275
Linderman Bros., Allegany	Cat.	6
Linderman, Chas. O., Allegany	Cat.	7
Lockie, Colin J., Gouverneur	St. L.	†33
Lormor, James E., Dryden	Tompkins	..
Lucas, Fred, Champlain	Clinton	1
Lyon, W. H., Chaseville	Otsego	20
McGowan, A. J., No. Bangor	Fr.	1
McNair, H. R., Dansville	Livingston	1
Mellen, C. R., Geneva	Ontario	2
Merz, Frank, Jamestown	Cha.	11
Metcalf, W. W., Castile	Wyoming	55
Miller, Geo. W. & Chas. P., So. Byron,	Genesee	25
Miller, H. A., Morris	Otsego	8
Miller, Wm. B., Clifton	Monroe	130
Mitchell, Albert A., Palmyra	Wayne	80
Moffat, S. L., & Son, Washingtonville,	Orange	10
Moffat, Warren H., Washingtonville,	Orange	10
Morse, James S., Levanna	Cayuga	50
Morton, Chas., Almond	Allegany	39
Munson, George W., Delhi	Del.	4
Murdock Bros., Crown Point	Essex	1
Newbold, Thomas, Hyde Park	Dut.	12
New York State School of Agriculture, Morrisville	Madison	3
Nutt, E. C., Dresden	Yates	2
Page, D. E., Perry	Wyoming	1
Palmer, C. D., Atwater	Cayuga	3
Pattridge, C. O., Perry	Wyoming	35
Paul, Hiram, Woodhull	Steuben	70
Perkins, H., & Son, Red Creek	Way.	34
Phelps, Irving W., E. Freetown	Cor.	2
Phillips, B. F., & Sons, E. Bloomfield,	Ontario	30
Poelma Bros., Albion, R. D. 1	Orl.	10
Preston, W. H., Springwater	Liv.	20
Quinion, H. C., E. Chatham	Col.	..
Randall, J. S., Avoca	Steuben	27
Rathbun, Charles A., Comstock	Was.	7
Rathbun, F. G., Verona	Oneida	2
Reed, Lyman T., W. Winfield	Her.	14
Reed, Stephen, Sr., Caledonia	Liv.	42
Remington, H. F., Rochester	Monroe	5
Robbins, Harry P., Southampton	Suf.	4
Rodger, Albert H., Hammond	St. L.	27
Roeper, Wm. H., Wyoming	Wyoming	90
Rumsey, L. D., Lewiston	Niagara	200
Ryder, Arthur B., Barnerville	Sco.	55
Ryder, Chas., & Son, Barnerville	Sco.	60
Sawyer, L. N., Big Flats	Chemung	26
Selleck, W. R., Huntington	Suffolk	20
Shear, J. B., Putnam	Washington	1
Sherman, Frank L., Bath	Steuben	6
Simonds, M. D., Darien Center	Gen.	24
Smead, C. D., Hector	Schuyler	10
Smith, Frank Sullivan, Angelica	Alg.	5
Smith, G. E., Castile	Wyoming	20
Springstead, C. W., Naples	Ont.	30
Stacey, J. George, Waterloo	Seneca	180
Stearns, C. L., Clay	Onondaga	4
Stearns, Geo. T., Palmyra	Wayne	30
Stevens, E. E., & Son, Wilson	Niagara	38
Stevens, M., & Sons, Pennellville	Osw.	16
Stewart, Wm. H., Olean	Cattaraugus	22
Stone, W. H., Caledonia	Livingston	5
Story, John W., Freehold	Greene	7
Strever, Raymond V., Pine Plains	Dut.	1
Strickland, H. F., Chenango Forks,	Brm.	6
Stuart, B. C. & F. H., Springwater	Livingston	45
Talbot, U. B., Burlington Flats	Ots.	32
Tanner, D. M., So. Dayton	Cat.	†30
Terry, Walter L., Walton	Delaware	25
Thorne, Wm. T., Skaneateles	Ono.	40
Traver, Chas. N., Wynantskill	Ren.	16
Valentine, James H., Penn Yan	Yates	†19
Van Alstyne, Hugh, Old Chatham	Col	..
Van Atten, B. F., Jerusalem	Albany	31
Van Atten, J. A., Jerusalem	Albany	30
Van Scoy, R. Drew, Candor	Tioga	10
Van Vleet, Fred, Lodi	Seneca	55
Van Vranken, Adam, Rexford	Sar	5
Vincent, Ann A., So. Dayton	Cat.	7
Wait, James A., Otego	Otsego	24
Wardwell, Henry L., Springfield Center	Otsego	450
Wasserman, J., Mahopac	Putnam	60
Whittle, C. M., Hoosick Falls	Ren.	22
Wolcott, C. B., Falconer	Chautauqua	1
Wolfe, Frank W., Spencertown	Col.	41
Wright, G. E., Westport	Essex	10
Wyeth, Madison J., Lowville	Lewis	1
Young, D. F., Phoenix	Oswego	11

† Including pure-bred, not registered.

SOUTHDOWN

American Southdown Breeders' Association,
Frank S. Springer, Sec'y.,
Springfield, Ill.

Barton, J. C., Kanona.......Steuben	15
Beckett, W. O., Knowlesville..Orleans	4
Benham, E. M., & Sons, Canandaigua, Ontario	3
Birge, Charles W., Hector.....Schuyler	15
Bossert, Louis, Bay Shore.....Suffolk	30
Clark, E. A., & Sons, Greene.....Chn.	8
Clark, Frank C., Ticonderoga...Essex	3
Clark, Fred W., & Son, Wyoming..Wyo.	10
Colbert, L. M., & Sons, E. Chatham, Columbia	10
Cottrell, Case, Hoosick Falls....Ren.	1
Cottrell, Jay C., Hoosick Falls...Ren.	12
Cranford, W. V., Central Valley..Ora.	†65
Elliot, John, Wadsworth...Livingston	45
Ford, J. Howard, Stony Ford..Orange	1
Hamilton, W. V., Caledonia.Livingston	65
Karker, A. J., Cobleskill....Schoharie	12
Lewis, F. S., Ashville....Chautauqua	9
Lunn, John, Edmeston........Otsego	4
McLaughlin, D. L., Tacoma..Delaware	12
Moore, Edward, Albany.......Albany	15
Ostrander, R. C., Knowlesville....Orl.	17
Pattridge, C. O., Perry......Wyoming	24
Pratt, C. B., Chatham......Columbia	8
Rumsey, L. D., Lewiston.....Niagara	50
Secord, J. M., Trumansburg..Tompkins	75
Stewart, S. DeWitt, Kanona..Steuben	9
Trewer, J. T., Mt. Morris...Livingston	33
Tuthill, Frank H., Rocky Point...Suf.	1
Whitehouse, Henry J., Mt. Kisco..Wes.	1
Whitman, C. Morton, Katonah...Wes.	15
Wilder, V. A., Warwick.......Orange	†100

SUFFOLK

*American Suffolk Sheep Association**
James Bowman, Sec'y.,
Guelp, Ont., Canada

Bailey, Leslie, Bath ....Steuben	5
Daniels, F. A., Otego..........Otsego	9
Hills, E. S., & Son, Freeville.....Tom.	14
Jackson, Austin, Mineral Springs..Sco.	42
Sisson, Milton B., Almond....Allegany	33
Terpenning, F. N., W. Oneonta..Otsego	40
Tilbury, H. S., Union, R. D. 1..Broome	3
Wagar, Fenton, Naples..........Yates	4
Wagar, F. H., Middlesex........Yates	4
Whitney, J. C., Red Creek......Wayne	..

* We are informed by John W. Brant, accountant, Canadian National Live-Stock Records, Ottawa, Canada, that this association has gone out of existence. Mr. James Bowman was the last secretary.

TUNIS

American Tunis Sheep Breeders' Association,
Charles Rountree, Sec'y.,
Crawfordsville, Ind.

Alley, Jesse H., La Grangeville....Dut.	38
Allis, Clark, Medina ....Orleans	30
Beckett, W. O., Knowlesville..Orleans	3
Cox, Walter S., Scottsville.....Monroe	18
Hillis, A. W., So. Worcester....Otsego	15
Hulse, J. Alonzo, Wading River...Suf.	1
Jackson, Austin, Mineral Springs..Sco.	35
Keeney, C. N., Le Roy........Genesee	25
Leathesick, Mrs. L., Caledonia....Liv.	8
Light, C. A., Morris...........Otsego	20
McLaughlin, D. L., Tacoma...Delaware	15
McPherson, J. N., Scottsville..Monroe	150
Owen, Ralph E., Fulton........Oswego	5
Pennell, Wm. T., Honeoye.....Ontario	35
Pratt, Wm. B., Plattsburg....Steuben	4
Robinson, Robert, Bath.......Steuben	20
Van Alstyne, Edward, Kinderhook..Col.	8
Williams, Edson, Newark Valley..Tioga	17

GOATS

ANGORA

American Angora Goat Breeders' Association,
John W. Fulton, Sec'y.,
Live Stock Exchange, Kansas City, Mo.

Bateman, H. S., Champlain....Clinton	†20
Clark, F. Ambrose, Cooperstown..Ots.	†12
Dreyer, Mrs. C. B., Wantagh...Nassau	4
Hall, F. H., Lacona...........Oswego	†4
Kellogg, O. U., Cortland.....Cortland	50
Morse, James S., Levanna.....Cayuga	8
Palmer, Thomas, Allegany........Cat.	..
Roberson, A. H., Shushan.......Was.	†10
Ross, Craig A., Brentwood.....Suffolk	20
Scott, E. B., Bridgewater.....Madison	12
Shriner, W., Hector..........Schuyler	3
Snow, Jesse F., W. Stephentown..Ren.	23

MILCH

American Milch Goat Record Association,
J. C. Darst, Sec'y.,
Dayton, O.

Dreyer, Mrs. C. B., Wantagh...Nassau	2
Nicholls, Charles L., Lockport.....Nia.	2
Palmer, Thos., Allegany...Cattaraugus	..
Shriner, W., Hector..........Schuyler	†7
Yager, Theo. F., Rochester.....Monroe	11

SWINE

BERKSHIRE

American Berkshire Association,
Frank S. Springer, Sec'y.,
510 E. Monroe St., Springfield, Ill.

Albertson, John V., R. D., Breesport, Chemung	1
Alexander, J. S., Hillsdale........Col.	10
Alexander, W. A., Union Springs..Cay.	20
Alleman, L. A. W., Geneva......Sen.	4
Allen, F. R., Ithaca.........Tompkins	3
Allen, J. R., M. D., Orwell.....Oswego	19
Allen, Wm. H., Franklinville.....Cat.	4
Appel, Christopher, Ballston Spa..Sar.	2
Armstrong, Erskine W., Schoharie..Sco.	5
Austin, George F., Watkins......Scu.	2
Austin, G. Irving, Morton.....Monroe	4
Bailey, Leslie, Bath..........Steuben	1
Ball, Stephen L., Berkshire.....Tioga	8
Barker, E. B., Crown Point.....Essex	2
Barlow, A. G., Medina........Orleans	30
Barton, Wm. H., Central Bridge..Sco.	10
Beers, F. M., Catskill.........Greene	3
Benedict, F. H., McLean....Tompkins	35
Benedict, Harry L., Minetto...Oswego	9
Benedict, Zar, Lebanon.......Madison	1
Benham, E. M., & Sons, Canandaigua, Ontario	12
Benjamin, Wm. M., Garrison.....Put.	†31
Bennett, B. G., 814 Granite Building, Rochester ....Monroe	8
Bigelow, F. E., Whallonsburg...Essex	2
Blanchard, F. A., Cortland...Cortland	6
Bliss, Eli, Morrisville........Madison	2
Boardway, M. H., Lawton.......Erie	7

† Including pure-bred, not registered.

Bossert, Louis, Bay Shore.....Suffolk	70
Bouton, Harry B., Ashville......Cha.	12
Bower, John I., King Ferry...Cayuga	52
Bower, Ray B., Skaneateles......Ono.	†11
Brace, B. W., Albion..........Orleans	26
Bradish, J. C. & G. A., Glenfield..Lewis	30
Braley, B. B., Albion.........Orleans	1
Breese, E., Wellsville, R. D. 4....Alg.	2
Brown, L. H., Hammondsport....Stu.	2
Brown, Wm. J., Garrison.....Putnam	27
Brown, W. S., Elbridge.....Onondaga	4
Buell, Ely, Irondequoit.......Monroe	†7
Burg Dorf, A. C., Geneva, R. D. 4..Sen.	2
Burnette, F. H., Phelps.......Ontario	4
Bushfield, Thomas L., Canandaigua, Ontario	6
Button, E. L., Melrose.....Rensselaer	1
Case, P. W., E. Bloomfield....Ontario	2
Case, W. C., Kennedy....Chautauqua	5
Chadwick, John S., Lakemont...Yates	1
Chamberlain, J. C., Chester...Orange	25
Chenango County Farm, Preston..Chn.	5
Clark, F. Ambrose, Cooperstown..Ots.	65
Colligan, E. J., Watertown...Jefferson	8
Cook, A. B., Andover.........Allegany	1
Corwin, Frank J., Riverhead...Suffolk	5
Cottrell, Case, Hoosick Falls.....Ren.	2
Craig Colony, Sonyea......Livingston	†27
Craig, John, Delhi..........Delaware	..
Crawford, J. B., Dundee........Yates	1
Cuthbert, W. L., Hammond.....St. L.	2
Dennis, R. W., Jasper........Steuben	4
DeWitt, C. B., Bradford......Steuben	2
DeWitt, M. A., Binghamton...Broome	6
Doremus, Geo. S., Merrifield...Cayuga	1
Douglass, S. B., Canandaigua....Ont.	1
Dungan, B. T., E. Aurora.........Erie	3
Dunham, Wm. H., Jr., Waterloo..Sen.	2
Dunlap, W. Barlow, Amsterdam..Mtg.	25
Dwight, W. H., So. Otselic......Chn.	2
Dyer, Myron J., Jefferson...Schoharie	†7
Earing, Mark, Geneva.........Seneca	14
Edgerton, F. A., Ava..........Oneida	8
Eldredge, C. A., Palmyra......Wayne	22
Ervin, Roscoe W., Sinclairville...Cha.	8
Evans, E. R., Ithaca.......Tompkins	2
Evans, James, Schaghticoke......Ren.	†58
Faba, Paul J., Atwater.........Cayuga	1
Ferris, Geo. L., Atwater......Cayuga	28
Fields, F. C., Rodman.........Jefferson	1
Fisher, J. C., & Son, Madrid....St. L.	5
Ford, Ellsworth, Rye......Westchester	†1
Ford, J. Howard, Stony Ford..Orange	1
Fowler, Northrup, Amenia...Dutchess	18
Foxhollow Farm, Rhinebeck..Dutchess	20
Foxton, H. C., Syracuse....Onondaga	16
Frutchey, P. G., So. Livonia......Liv.	24
Fuller, G. W., Corning.......Steuben	5
Fuller, H. T., Peru...........Clinton	2
Gardner, Clarence E., Cooperstown, Otsego	6
Gick, Frank, Saratoga Springs....Sar.	16
Gick, John, Saratoga Springs....Sar.	5
Gilmore, James J., Geneseo.......Liv.	40
Glass, William C., Lisbon.......St. L.	3
Goodfellow, Frank, Ft. Edward..Was.	2
Gordon, Fred H., Brockport...Monroe	8
Gould Bros., East Hampton....Suffolk	8
Gray, D. E., Groveland Sta......Liv.	†26
Gray, G. F., Lima.........Livingston	1
Green, John D., Morristown....St. L.	1
Green, W. W., Morristown.......St. L.	30
Greene, C. A., & Son, Perryville..Mad.	3
Griffin, J. H., Moira.........Franklin	12
Guthrie, J. C., Groton.......Tompkins	1
Hadlock, Grover A., Hammondsport, Steuben	5
Hall, John, Moravia..........Cayuga	11
Hall, Parker, Niverville.....Columbia	2
Ham, John M., Millbrook....Dutchess	20
Hamil, Daniel H., Walker.....Monroe	2
Hammond, John Henry, Mt. Kisco, Westchester	7
Haney, Henry T., Bridgehampton..Suf.	4
Hanford, F. S., Honeoye Falls....Moe.	†140
Harding, Thomas S., Gilbertsville..Ots.	†9
Harpending, H. C. & H. B., Dundee, Yates	458
Harris, Chas. L. & Geo. H., Penfield, Monroe	28
Harris, S. G., Tarrytown..Westchester	11
Harris, W. H., Newburg.......Orange	†16
Harrison & Rowe, Mt. Sinai...Suffolk	3
Hart, Will J., York........Livingston	15
Haswell, W. W., Hoosick...Rensselaer	4
Hatch, Hyatt C., Atlanta.....Steuben	2
Hathaway, B. L., Alpine.....Schuyler	4
Hathway, J. R., Homer......Cortland	12
Haven, H. J., Heuvelton..St. Lawrence	5
Hawks, Edwin A., Trumansburg..Sen.	4
Hayden, Wm. & Son, McDonough..Chn.	10
Healy, A. A., Poughquag....Dutchess	7
Hedges, S. C., E. Hampton....Suffolk	14
Hillis, Spencer A., Davenport....Del.	..
Hinman, F. C., Gallupville..Schoharie	1
Holcomb Bros., Westfield........Cha.	2
Hollingsworth, S. D., Morrisville..Mad.	8
Hooker, James Gordon, Fairport..Moe.	25
Hoyt, E. M., & Son, Jasper...Steuben	18
Hoyt, F. W., Halsey Valley.....Tioga	7
Hulse, J. Alonzo, Wading River..Suf.	14
Huson, Calvin J., Penn Yan....Yates	60
Hutchins, Geo. P., Lamontville...Uls.	4
Ilsley, N. R., Dewittville........Cha.	8
Ingalsbe, Grenville M., Hudson Falls, Washington	†12
Inscho, H. S., Bradford.......Steuben	50
Jackson, Addison, Castile....Wyoming	2
Jones, A. F., Bridgehampton...Suffolk	100
Jones, F. J., Sauquoit........Oneida	36
Jones, I. Willard, Wellsville.....Alg.	5
Katonah Wood Farm, Katonah...Wes.	30
Kellogg, Chas. F., Treadwell.....Del.	1
Kellogg, O. U., Cortland....Cortland	2
Kelly, Benj. E., Ellenville......Ulster	4
Kenotin Farm, Washington Mills..Oni.	145
Kenyon, D. B., Richfield Spa...Otsego	1
Kerr, T. J., Collins.............Erie	61
Kinne, H. M., Romulus........Seneca	3
Kissley, Jos., Tannersville.....Greene	4
Kittle, S. F., Ghent.........Columbia	1
Kline, G. J., Stittville.........Oneida	2
Lane, Geo. E., Potsdam........St. L.	7
Lane, Lewis B., Groton.....Tompkins	8
Lanpher, H. B., Copenhagen....Lewis	3
Lawrence, Wm. S., Moira....Franklin	..
Leach, J. S., & Son, Gouverneur..St. L.	2
Legg, C. E., Weedsport, R. D.....Cay.	..
Lester, A., Owasco...........Cayuga	2
Lewis, Norman, Pine City....Chemung	3
Littel, H. M., Macedon........Wayne	..
McCall, Alex., Caledonia...Livingston	25
McGuire, Horace, & Wood, Hiram R., Pittsford ....Monroe	†5
McLennan, John, Fayetteville....Ono.	40
MacNaughton, John, Caledonia....Liv.	8
McWharf, B. D., Waterloo.....Seneca	†19
Major, J. K., Wading River....Suffolk	10
Many, P. M., Livingston Manor..Sul.	3
Merz, Frank, Jamestown..Chautauqua	1
Messer, W. B., Voorheesville...Albany	10
Mickel, LeRay, Cobleskill...Schoharie	1
Miller, Geo. W. & Chas. P., So. Byron, Genesee	3
Moore, Edward, Albany.......Albany	2
Moot, J. Arthur, Lincklaen......Chn.	2
Morhous, Dell, Willsboro.......Essex	†1
Morris, John S., Vernon......Oneida	3
Morse, A. D., Jewett..........Greene	1
Morse, J. Grant, Hamilton...Madison	18
Munn, Harry G., Treadwell..Delaware	4
Myers, E. E., Conewango.........Cat.	1

† Including pure-bred, not registered.

Near Bros., Jamestown..........Cha.	12
New York State School of Agriculture, Morrisville . . ..Madison	4
New York State Training School for Girls, Hudson............Columbia	3
O'Connor, James C., Hornell.....Stu.	8
O'Emisch, Henry, Pittsford....Monroe	80
Olin, Walter T., Perry......Wyoming	..
Ovenshire, Guy G., Beaver Dams..Stu.	10
Paine & Sprague, Millerton..Dutchess	3
Palmer, Wm., Moscow......Livingston	1
Peer, F. S., Ithaca.........Tompkins	3
Pelton, J. H., Monticello.....Sullivan	3
Peters, Ralph, Wading River..Suffolk	1
Pierfe, John W., Clyde........Wayne	8
Pike, H. J., Norwich.......Chenango	5
Pindy, Fred E., Altona.......Clinton	10
Pitkin, J. P., Friendship.....Allegany	..
Pohl, Lewis C., Redfield.......Oswego	3
Potter, James, Cassville.......Oneida	8
Pratt, J. S., Knowlesville.....Orleans	8
Prince, A. H., Montour Falls.....Scu.	7
Reeves, R. Newell, E. Palmyra..Way.	1
Rich, Adelbert P., Auburn....Cayuga	2
Ridley, Horace, Ithaca......Tompkins	1
Risley, E. E., Walton......Delaware	27
Rives, Reginald W., New Hamburg, Dutchess	17
Robbins, Harry P., Southampton..Suf.	11
Roberts, Geo. V., & Son, Port Byron, Cayuga	3
Robertson, Wm., Friendship......Alg.	5
Robinson, Garrett, Richfield Springs, Otsego	2
Robinson, Gustave A., Richfield Springs, Otsego	13
Robson, Alex., Lisbon...St. Lawrence	2
Rockwell, A. C., Garrattsville....Ots.	1
Roeper, Wm. H., Wyoming...Wyoming	1
Roulet, F., Newark Valley......Tioga	5
Santee, E. M., Cortland......Cortland	9
Sayer, Walter J., Wyoming..Wyoming	4
Schoonmaker, Anson, Schoharie..Sco.	2
Schriver, Andrew, Chester.....Orange	10
Scott, A. J., Gouverneur.......St. L.	2
Scott, Royal R., Canandaigua....Ont.	2
Secor, B. D., Delmar..........Albany	2
Selleck, W. R., Huntington....Suffolk	18
Sheldon, Ernest, Lisbon........St. L.	6
Sherman, Frank L., Bath.....Steuben	8
Sherwood, Reuben, Cameron Mills..Stu.	1
Simmons, Ralph W., Canandaigua..Ont.	1
Sisson, C. L., Almond.......Allegany	7
Smallwood, Clarence A., Warsaw..Wyo.	1
Smallwood, W. W., & Son, Warsaw, Wyo.	5
Smith, F. L., E. Beekmantown....Cli.	..
Spencer, Don M., Canton.......St. L.	2
Stannard, Frank, Elmira....Chemung	19
Starkweather, R. G., Jordanville..Her.	6
Stearns, C. L., Clay, R. D. 2....Ono.	40
Stewart, J. Henry, Kanona......Stu.	5
Stewart, J. T., Fonda....Montgomery	33
Stone, Richard H., Trumansburg..Tom.	125
Story, Chas. H., Catskill......Greene	8
Story, R. T., Freehold........Greene	14
Studley, Sumner N., Dayton......Cat.	2
Swinnerton, Guy F., Wynantskill..Ren.	1
Taylor, Ford W., No. Collins....Erie	4
Teller, C. F., Syracuse......Onondaga	15
Tenney, W. J., Hamlin........Monroe	†3
Tenny, Clyde M., Hamlin.....Monroe	2
Terwilliger, H. M., Kirkville.....Ono.	65
Thompson, J. A., Addison....Steuben	†1
Tiffany, H. M., Norwich....Chenango	5
Tilbury, H. S., Union.........Broome	30
Tryon, C. D., No. Stockholm....St. L.	3
Turner, G. Archie, Horseheads..Chm.	7
Van Derveer, Geo., Amsterdam...Mtg.	6
Van Fleet, Edward, Reynoldsville..Scu.	1
Vangelder, J. E., Owego........Tioga	2
Van Wagenen, Jared, Jr., Lawyersville, Schoharie	10
Van Wickle, C. H., Geneva....Ontario	1
Viele, Frank, Johnsonville.......Ren.	9
Ward, Walter E., Albany......Albany	17
Wardwell, Henry L., Springfield Center, Otsego	15
Warner, F. P., Canandaigua.....Ont.	†30
Wart, Theo., & Son, Lacona...Oswego	7
Watkins, Geo. J., Bath.......Steuben	6
Weatherby, J. C., Trumansburg..Tom.	20
Weeks, E. A., Locke..........Cayuga	1
Wellman, M. I., Pavilion......Genesee	1
Wells, Horace J., 99 Sound Ave., Riverhead . ...Suffolk	2
Wheeler, Will E., Holcomb....Ontario	·3
Whiteman, C. A., Jasper......Steuben	1
Wicks, Alfred L., Fishkill....Dutchess	80
Wilder, Joseph, Warsaw.....Wyoming	26
Willets, Samuel, Roslyn.......Nassau	..
Williams, Jacob, Roosevelt....Nassau	4
Wilson, J. V., 740 Atlantic Ave., Brooklyn . ...Kings	17
Wintringham, H. C., Millerton...Dut.	8
Witter, E. H., Cuba.........Allegany	13
Wolcott, C. B., Falconer..Chautauqua	12
Woodward, G. R., Woodhull...Steuben	28
Wright, F. S., Worcester.......Otsego	†3
Young, John A., Delanson, R. D. 1, Schenectady	4

CHESHIRE

Cheshire Swine Breeders' Association,
Ed. S. Hill, Sec'y.,
Freeville, N. Y.

Barns, Amos A., Ithaca, R. D. 4..Tom.	2
Barton, J. C., Kanona........Steuben	7
Bean, W. L., McGrawville....Cortland	3
Bell, David K., Rochester, R. D. 2.Moe.	1
Bell, J. W., & Son, Portland.....Cha.	2
Bostwick, Chas. D., Ithaca..Tompkins	4
Brown, Miles S., Ithaca, R. D. 2..Tom.	1
Burr, W. S., Interlaken........Seneca	†12
Button, R. D., Canastota .....Madison	†18
Calder, John J., Freehold......Greene	3
Carman, C. Owen, Trumansburg..Tom.	†16
Chapin, R. E., & Son, Batavia..Genesee	3
Colwell, Richard, Wellsburg..Chemung	†21
Cornell University, Ithaca...Tompkins	50
Esch, Fred W., Verona.........Oneida	3
Fitzpatrick, B., & Sons, Peru...Clinton	1
Gates, Dr. James M., Johnstown...Ful.	1
Godfrey, J. H., Trumansburg....Tom.	4
Grimes, R. L., Lyndonville.....Orleans	11
Guernsey, F. & C. R., Schoharie...Sco.	†12
Hale, William B., Rochester....Monroe	†30
Hall, W. R., Ithaca.........Tompkins	2
Hallock, E. J., Riverhead........Suffolk	3
Hartt, Eliza, Trumansburg......Tom.	1
Hawley Stock Farms, Batavia....Gen.	41
Hewlett, B. R., Interlaken.....Seneca	4
Hill, E. S., & Son, Freeville......Tom.	20
Hoose, Arthur D., Duane....Franklin	3
Hudson, S. K., Seeley Creek..Chemung	2
Janes, W. E., Ithaca ....Tompkins	13
Jeffords, Harry A., Whitney Point.Brm.	1
Kellogg, O. U., Cortland.....Cortland	6
Knox, Harry Mason, Canton.....St. L.	15
Mackey, W. W., Milton.........Ulster	3
Meade, Geo. L., Rochester.....Monroe	1
Morse, E. K., Moravia.........Cayuga	10
Nutt, E. C., Dresden............Yates	1
Otis, S. G., Sherwood.........Cayuga	25
Owen, Ralph E., Fulton........Oswego	3
Pearson, Jay E., Springfield Center Otsego	2
Pearson, Raymond A., Ithaca, R. D. 3, Tompkins	10
Pierce, Allen A., Middleport..Niagara	1

† Including pure-bred, not registered.

Preston, W. H., Springwater......Liv.	8
Reid, Whitelaw, Purchase..Westchester	5
Risley, E. E., Walton........Delaware	5
Robinson, Wm. H., & Sons, Owego..Tio.	1
Ross, H. D., & Sons, Lowville..Lewis	3
Ruehle, Otto, Pleasant Valley..Dutchess	4
Scribner, W. L., Schoharie...Schoharie	2
Smith, G. E., Castile........Wyoming	28
Tailby, G. W., Jr., Ithaca...Tompkins	2
Terpening, F. N., W. Oneonta...Otsego	6
Weaver, H. D., Jackson Corners...Dut.	1
Wilder, Joseph, Warsaw.....Wyoming	4
Wilson, Edgar R., Corning....Steuben	8
Wright, Thomas E., Webster...Monroe	3
Zeh, Stephen L., Schoharie...Schoharie	6

CHESTER-WHITE

The American Chester-White Record Association,

A. C. Fielder, Sec'y.,

DeGraff, O.

Ansley, A. C., Penn Yan.........Yates	15
Avery, O. J., No. Collins.........Erie	1
Baker, Andrew, Freeville....Tompkins	3
Barker, Josiah, Watervliet.....Albany	1
Benson, C. F., Groton........Tompkins	†4
Black, Eugene T., Scio........Allegany	22
Brayman, Clancy C., Westerlo..Albany	7
Cady, Louis E., Spencerport....Monroe	†7
Calder, John J., Freehold.......Greene	3
Chamberlin, Edw. A., Westkill..Greene	2
Colbert, L. M., & Sons, E. Chatham, Columbia	6
Conkling Farm, Rensselaerville....Alb.	4
Cowden, L. D., Fredonia..Chautauqua	11
Delano, F. S., Ensenore.......Cayuga	31
Dewey, John M., Turin.........Lewis	2
Dolph, Earle L., Cuba.........Allegany	14
Dorr, Adam, Depauville.....Jefferson	6
Elmtree Farm, Charlotte......Monroe	70
Faulkner, W. W., Bath.......Steuben	†25
Felt, Nick, Allegany......Cattaraugus	5
Field, Augustus B., Sterlington...Roc.	..
Fisher, Robert B., Cambridge....Was.	†13
Gridley, M. J., Alfred Station....Alg.	1
Hargrave, Joseph, Lisbon.......St. L.	1
Hedden, S. P., Cuba.........Allegany	6
Herber, John, Delmar........Albany	9
Hillis, A. W., So. Worcester....Otsego	4
Hoose, Wellington M., Vintonton..Sco.	5
Hutchins, George P., Lamontville..Uls.	3
James, E. T., & Sons, Cuba..Allegany	2
Jenney, A. D., Syracuse.....Onondaga	1
Johnson, John B., Rome.........Oneida	52
Ladew, Harvey S., Glen Cove..Nassau	3
Letchworth & Delano, Ensenore...Cay.	32
Lewis, Wm. A., Gilboa.......Schoharie	10
Loring, John D., Goshen.......Orange	6
Loucks, Fred H., Lowville......Lewis	2
Lucas, Fred, Champlain.......Clinton	1
McKenna, Floyd, Ft. Covington....Fr.	1
Mellen, C. R., Geneva.........Ontario	3
Meyer, Henry von L., Suffern....Roc.	5
Mitchell, D. P., Clyde, R. D. 1..Wayne	10
Morton, L. P., Rhinecliff.....Dutchess	50
New, T. G., Canastota.........Madison	†3
Palmer, C. D., Atwater........Cayuga	†8
Palmer, Oliver, Catskill.......Greene	8
Parker, Ray W., Coventry...Chenango	2
Pease, C. Henry, Mapleton.....Cayuga	7
Remington, Ralph L., Greenwich..Was.	2
Risley, E. E., Walton........Delaware	33
Rockwell, John H., Windsor...Broome	2
Schermerhorn, W. W., Keesville..Essex	1
Selleck, W. R., Huntington.....Suffolk	28
Shaw, Chas E., King Ferry....Cayuga	2
Sheldon, I. L., Ellenburg Depot....Cli.	†1
Sherman, Arthur K., Java Village Wyo.	2
Slingerland, Amasa, Delmar....Albany	3
Stewart, Wm. H., Olean...Cattaraugus	14
Story, John W., Freehold......Greene	2
Sutcliffe Bros., Eton.........Madison	3
Thompson, C. R., Wellsville...Allegany	5
Tibbitts, A. J., Jamestown.Chautauqua	1
Traver, Charles N., Wynantskill..Ren.	2
Trewer, J. T., Mt. Morris...Livingston	27
Van Atten, B. F., Jerusalem...Albany	27
Van Horne, C. S., Amsterdam....Mtg.	4
Ward, M. J., Savona ....Steuben	5
Whitney, J. C., Red Creek......Wayne	..
Wolfe, Frank W., Spencertown....Col.	8

CHESTER-WHITE (Ohio Improved)

The O. I. C. Swine Breeders' Association,

O. C. Vernon, Sec'y Treas.,

Millersburg, Ind.

Adams, E. J., Adams Basin....Monroe	2
Ardrey, George, Dundee........Yates	1
Babcock, Elias, Schoharie...Schoharie	5
Badger, Le Roy, DeRuyter......St. L.	4
Bailey, C., Burnt Hills.......Saratoga	7
Baker, H. B., Gouverneur........St. L.	10
Beaham, Harry E., Watkins...Schuyler	2
Bennett, Chas. O., Hilton......Monroe	†2
Bolt & Huey, Watkins........Schuyler	2
Butler, Walter J., Glens Falls..Warren	10
Carrier, Jesse I., Fulton.......Oswego	46
Colbert, E. J., E. Chatham...Columbia	1
Cotton, Geo. I., Friendship...Allegany	2
Cotton, J. C., Almond ....Allegany	1
Crawford, J. B., Dundee......Schuyler	1
Dixon, E. F., Memphis......Onondaga	2
Evans, M. E., Reynoldsville...Schuyler	2
Faucett, J. S. & A. J., Dundee....Scu.	†24
Fisk, D. E., Unadilla.........Otsego	1
Frisbie, G. W., & Co., Savona..Steuben	37
Goodfellow, Frank, Ft. Edward...Was.	2
Gordon & Hollingworth, Pultneyville, Wayne	1
Gould, John H., Batavia......Genesee	1
Greene, Clifford E., Greene..Chenango	21
Hall, A. J., & Son, Little Genesee..Alg.	10
Hall, Miller, Alpine..........Schuyler	10
Haliday, C. W., N. Chatham..Columbia	6
Hamilton, E. C., Richville.......St. L.	5
Harrington, B. F., Rathbone...Steuben	2
Horton, E. E., Binghamton....Broome	6
Hotis, F., & Son, Evans Mills.....Jef.	5
House, John H., Richfield Springs.Her.	1
House, J. Taylor, Richfield Springs, Otsego	6
Jones, Benj. F., Marcy........Oneida	5
Lewis Bros., Dryden........Tompkins	3
Longwell, Alden, Savona......Steuben	1
Loucks, Fred H., Lowville.....Lewis	2
Merritt, H. W., Syracuse....Onondaga	3
Orvis, Geo. E., Black River..Jefferson	3
Page, Tracy R., Groton......Tompkins	1
Pardy Bros., Plattsburg.......Clinton	15
Paul, Hiram, Woodhull.......Steuben	6
Peebles, Arthur, Carthage....Jefferson	10
Pendergast, S. C., Phoenix..Onondaga	2
Phelps, Irving W., E. Freetown...Cor.	10
Phillips, B. F., & Sons, E. Bloomfield, Ontario	†90
Preston & Mingus, Andover...Allegany	2
Rice, W. S., Adams ....Jefferson	20
Robinson, Robert, Bath.......Steuben	8
Ryther, E. N., Franklinville.......Cat.	1
Schaffer, F. W. & W. D., Lockport, Niagara	1
Secor, Chas. H., Mountainville..Orange	†15
Shaw, J. R., DeLancey.......Delaware	7
Smith, Alex. N., Monroe.......Orange	2
Smith, Chas., Waterloo.........Seneca	1
Smith, Geo. W., Friendship...Allegany	1
Smith, Melvin, Edmeston.......Otsego	3
Smith, Wm. T., Saratoga Springs, R. D. 1.................Saratoga	2

† Including pure-bred, not registered.

Story, John W., Freehold......Greene	2
Tibbitts, A. J., Jamestown........Cha.	1
Trask, F. A., Rock Stream......Yates	†12
Tucker, F. L., M. D., 464 Ninth St., Brooklyn ....Kings	2
Tuckerman, Lucius C., Milton...Ulster	†6
Van Buren, William, Camden..Oneida	3
Van Doren Bros., Lysander..Onondaga	3
Wall, C. H., Savona..........Steuben	1
Walton, W. M., & Shaner, G. L., Bolivar ....Allegany	2
Weast, James A., Delanson.......Scy.	3
Whipple, D. E., Little Valley.....Cat.	7
White, F. C., Cincinnatus.....Cortland	10
Wilbur, Chas. E., Greenwich.....Was.	1
Wilson, R. R., Hammond........St. L.	1
Yaxley, Edward, Medina.......Orleans	1

DUROC-JERSEY

The American Duroc-Jersey Swine Breeders' Association,
T. B. Pearson, Sec'y-Treas.,
Thorntown, Ind.

Aldrich, G. E., Mattituck......Suffolk	†15
Bander, Frank W., Fort Plain....Mtg.	35
Barnes, C. E., Oxford.......Chenango	54
Benjamin, J. R., Calverton.....Suffolk	3
Briggs, Fred W., Quaker Street...Scy.	1
Burr, W. S., Interlaken........Seneca	†10
Campbell, J. Wendell, Peterboro...Mad.	3
Clark, Wm. H., Collins Center....Erie	10
Cranberry Ranch Co., Ashville...Cha.	28
Cromwell, F. B., Barnard......Monroe	3
Daniels, J. M., Greenfield Center, R. D. 1 ....Saratoga	4
De Long, Harry N., Rexford..Saratoga	4
De Vaul, Chauncey E., Chittenango Sta., Madison	14
Ellsworth, Webster H., Nichols..Tioga	8
Faulkner, Jay H., Amsterdam.....Mtg.	..
Gardinier, Chas. M., Ft. Plain....Mtg.	2
Greene, Clifford E., Greene..Chenango	6
Hard, F. A., Afton.........Chenango	2
Hillis, A. W., So. Worcester....Otsego	3
Hoese, Conrad, Sprakers..Montgomery	9
Ingraham, F. B., Naples......Ontario	14
Jacobs, Wm. H., Trout Creek..Delaware	1
Lamon, A., & Son, Central Bridge..Sco.	2
Lane, Barent H., Coxsackie....Greene	15
Mitchell, Daniel, Ithaca.....Tompkins	†12
Myers, William S., Bainbridge R. D., Chenango	1
Nevinger, Chas. P., Warsaw..Wyoming	1
Padgett, Homer G., Oxford...Chenango	1
Remington, H. F., Rochester...Monroe	3
Risley, E. E., Walton........Delaware	7
Selleck, W. R., Huntington....Suffolk	16
Smallwood, Clarence A., Warsaw..Wyo.	†2
Smallwood, W. W., & Son, Warsaw, Wyoming	6
Smith, W. J., So. Dayton........Cat.	5
Sutcliffe Bros., Eaton........Madison	1
Tenney, W. J., Hamlin........Monroe	†8
Townsend, D. H., & Sons, Lodi..Seneca	20
Van Alstyne, Edward, Kinderhook..Col.	7
Vanderveer Bros., Fultonville....Mtg.	10
Walrath, Willard F., Ft. Plain....Mtg.	50
Weed, Frank E., Ballston Lake....Sar.	12
Wellman, Morris, Ashville........Cha.	9
Williams, John R., Ovid.......Seneca	4
Willett, Denton, Collins..........Erie	6

ESSEX

American Essex Association

Hamilton, E. C., Richville......St. L.	2
Hathaway, B. L., Alpine.....Schuyler	6
Hillis, A. W., So. Worcester...Otsego	3
Hillis, Spencer A., Davenport.....Del.	..
Risley, E. E., Walton.......Delaware	2
Stewart, S. Dewitt, Kanona...Steuben	2
Townsend, D. H., & Sons, Lodi..Seneca	20

HAMPSHIRE

American Hampshire Swine Record Association,
E. C. Stone, Sec'y.,
Peoria, Ill.

Butler, Walter J., Glens Falls..Warren	15
Dunham, Mrs. Norvilla, Plainville..Ono.	†53
Faulknor, Abram M., Amsterdam, R. D. 8 ....Montgomery	3
Ferris, Arthur J., Albion......Orleans	2
Hillis, A. W., So. Worcester....Otsego	2
Lewis, C. W., & Son, Alfred Station, Orleans	10
Pierce, Duncan H., Derby........Erie	1
Risley, E. E., Walton.......Delaware	3
Scofield, Leroy W., Freehold....Greene	3
Spaulding, L. E., Bangor....Franklin	8
Wessendorf, John, Byron.....Genesee	2
Whitney, J. C., Red Creek....Wayne	..

MULEFOOT

Allen, Charles C., Greene....Chenango	4
Ketchum, Hiram P., E. Northport..Suf.	2
McPherson, J. N., Scottsville....Moe.	22
Risley, E. E., Walton.......Delaware	5
Smith, A. H., Chappaqua........Wes.	10

POLAND CHINA

National Poland China Record Co.,
A. M. Brown, Sec'y.,
Winchester, Ind.

Aikin, Adolphus, Sanborn.....Niagara	30
Alden, A. M., Freehold........Greene	8
Bateman, H. S., Champlain....Clinton	7
Braith, J. V. D. H., Jerusalem....Alb.	†60
Carman, C. Owen, Trumansburg..Tom.	†5
Clark, Frank C., Ticonderoga....Essex	3
Day, Charles F., Java.......Wyoming	3
Dearlove, J. L., Prattsburg...Steuben	28
Everman, Albert J., Dansville....Liv.	1
Fairbank, Augustus, Churchville..Moe.	†20
Halladay, Fletcher J., Jamestown..Cha.	3
Hamil, Daniel H., Walker.....Monroe	2
Healy, A. A., Poughquag.....Dutchess	1
Hillis, Spencer A., Davenport.....Del.	..
Hutchins Bros., Pulaski.......Oswego	1
Keady, J. W., Lodi.............Seneca	6
Lamon, A., & Son, Central Bridge, Schoharie	2
Leary, Joseph, Holcomb.......Ontario	2
Littel, H. M., Macedon........Wayne	..
McLenithan, Austin J., Cambridge, Washington	2
Miller, F. N., Holland...........Erie	†8
Miller, Wm. B., Clifton.......Monroe	15
Narita, Koichi, Westdale......Oneida	1
Ostrander, R. C., Knowlesville....Orl.	11
Palmer, A. B., Gansevoort...Saratoga	17
Payne, Edgar S., Penn Yan....Yates	12
Risley, E. E., Walton.......Delaware	3
Rupracht, Fred, Fernwood....Oswego	†6
Seeley, R. Fenton, Waterloo....Seneca	40
Selleck, W. R., Huntington....Suffolk	22
Semans, Willis C., Bristol Center..Ont.	12
Seymour, Thomas, DeKalb......St. L.	9
Stewart, J. T., Fonda....Montgomery	1
Story, L. M., Freehold.........Greene	3
Townsend, D. H., & Sons, Lodi..Sen.	10
Tucker Bros., Scio..........Allegany	8
Tucker, L. G., Scio..........Allegany	11
Vance, Wm. T., Willow Creek....Tom.	3
Vander Veer, G. Henry, Amsterdam, Montgomery	2
Van Gelder, G. B., Canandaigua..Ont.	20
Wright, B. F., Ransomville....Niagara	29
Wright, George S., Cambridge....Was.	40

† Including pure-bred, not registered.

SUFFOLK

American Suffolk Swine Breeders' Association

Hillis, A. W., So. Worcester....Otsego	15
Risley, E. E., Walton........Delaware	6

TAMWORTH

The American Tamworth Swine Record Association,

E. N. Ball, Sec'y.,
Hamburg, Mich.

Bossert, Louis, Bay Shore.....Suffolk	10
Dawley, F. E., Fayetteville......Ono.	6
Hamilton, E. C., Richville......St. L.	6
Hillis, A. W., So. Worcester....Otsego	8
Light, C. A., Morris...........Otsego	2
Otis, S. G., Sherwood.........Cayuga	12
Pattison, E. P., Mt. Morris.......Liv.	6
Peters, Samuel T., Islip.......Suffolk	30
Risley, E. E., Walton.......Delaware	3
Rogers, Chas. B., Clinton......Oneida	10
Royce, Chas. H., Ithaca.....Tompkins	4
Scribner, W. L., Schoharie........Sco.	3

VICTORIA

Victoria Swine Breeders' Association

Carman, C. Owen, Trumansburg..Tom.	2
Hillis, A. W., So. Worcester....Otsego	6
Risley, E. E., Walton........Delaware	3
Scribner, W. L., Schoharie..Schoharie	8
Sisson, Milton B., Almond...Allegany	3
Swarts, Scott W., Springwater...Liv.	1
Terpening, F. N., W. Oneonta...Otsego	11

YORKSHIRE (Large)

The American Yorkshire Club,
Harry G. Krum, Sec'y-Treas.,
White Bear Lake, Minn.

Acker, A. F., E. Bethany....Genesee	13
Allen, Chas. C., Greene......Chenango	23
Bahe, William, Onondaga Hill....Ono.	3
Baker, W. L., Manlius......Onondaga	20
Baldwin, William, Glenfield.....Lewis	2
Bennett, J. N., Antwerp.....Jefferson	1
Burke, John, Ilion..........Herkimer	9
Calman, M., & Son, Canandaigua..Ont.	14
Carleton, E. A., Mt. Vision....Otsego	†34
Carman, C. Owen, Trumansburg..Tom.	2
Carpenter, C. A., Ashville.......Cha.	2
Chautauqua County Farm, Dewittville, Chautauqua	33
Conkling Farm, Rensselaerville...Alb.	6
Cook, D. H., M.D., 523 Clinton Ave., Albany . . ..Albany	7
Crandell, Bernhard E., Bernhards Bay, Oswego	3
Cummings, J., Remsen.........Oneida	2
Curtis, John G., Box 272, Rochester, Monroe	48
Cuthbert, W. L., Hammond.....St. L.	4
Denner, Chas. E., So. Hammond..St. L.	4
Dickirson, A. S., Thompson Ridge..Ora.	2
Dinehart, John C., W. Copake....Col.	8
Eddy, Robert D., Cattaraugus....Cat.	73
Elwood, P. H., Ft. Plain........Her.	3
Evans, E. R., Ithaca........Tompkins	35
Farnham, C. H., Brocton........Cha.	5
Gardner, W. Allan, Snyder.......Erie	†51
Gilbert, A., Kennedy......Chautauqua	24
Gross, Orra S., Greene......Chenango	1
Gurnsey, L. C., Woodhull.....Steuben	2
Howard, Frank, Stockton........Cha.	1
Hulst, E. T., Poughkeepsie...Dutchess	1
Jameson & Field, So. Wales......Erie	11
Jameson, G. A., M.D., So. Wales..Erie	11
Juppenlatz, H. F., Ghent....Columbia	1
Karr, S. S., & Son, Almond.......Alg.	2
Ketcham, Hiram P., E. Northport..Suf.	1
King, H. T., Chittenango.....Madison	10
Lansing, Wm. F., Little Falls....Her.	1
Lawton, E. J., Norwich....Chenango	3
Leggett, Grant, Ghent......Columbia	19
Lewis, Otis S., White Sulphur Springs, Sullivan	1
Lunt, C. S., Charlotte........Monroe	4
MacDonald, C. F., W. Henrietta..Moe.	2
Magire, Michael, Dansville.......Liv.	1
Miller, J. G., Blooming Grove....Sul.	3
Moot, J. Arthur, Lincklaen..Chenango	3
Nash, Mrs. J. W., Brasher Falls..St. L.	3
Nichols, E. E., & Son, Marcellus..Ono.	15
Palmer, Oliver, Catskill........Greene	12
Payne, Edgar S., Penn Yan.....Yates	2
Pendergast, S. C., Phoenix..Onondaga	2
Powell, Wilson M., Jr., Old Chatham, Columbia	25
Rickard, Herbert J., Jordan, R. D. 1, Onondaga	2
Risley, E. E., Walton.......Delaware	4
Roberts, Edward, & Sons, Clinton..Oni.	1
Rockwell, A. C., Garrattsville..Otsego	2
Rogers, A. P., Sagaponack.....Suffolk	1
Rowe, L. F., Otego............Otsego	2
Sawyer, L. N., Big Flats....Chemung	11
Sheldon, Earl, Copenhagen......Lewis	2
Simpkins, Eugene, Freehold....Greene	2
Sinclair, A. J., Kanona.......Steuben	1
Slater, W. H., Bernhards Bay....Osw.	3
Slingerland, Amasa, Delmar....Albany	2
Smith, A. H., Chappaqua........Wes.	40
Smith, John P., Dunkirk..Chautauqua	†4
Spickerman, Arkel, Schoharie.....Sco.	7
Strahan, S. B., Friendship....Allegany	5
Thompson, Chas. L., Pine Bush....Ora.	2
Virkler, Wm. F., Castorland.....Lewis	2
Wait, James A., Otego.........Otsego	12
Walker, Ernest B., Ph. G., Williamsville, Erie	1
Walsh, John, Babcock Hill.....Oneida	15
Wheeler, Frederic R., Lockport....Nia.	20

YORKSHIRE (Small)

Cooley, A. H., Little Britain......Ora.	30
Dinehart, John C., W. Copake....Col.	2
Robinson, Robt., Bath........Steuben	7
Secord, J. M., Trumansburg......Tom.	9
Stewart, S. DeWitt, Kanona...Steuben	2
Terpening, F. N., W. Oneonta....Ots.	2

† Including pure-bred, not registered.

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Bulletin 34

NURSERY INSPECTION

AND

List of Nurserymen in the State of New York Who Received Certificates of Inspection for the Year Ending September 1, 1912

NURSERY INSPECTION

LAW

Section 305 of the Agricultural Law of the State of New York is as follows:

"§ 305. **Action to be taken by the commissioner of agriculture relative to trees or other plants affected with or by contagious or infectious disease or fungous growth or infested with insect pest or pests and providing for issuing certificates relative to trees or other plants apparently free from such diseases and pests, regulating the use thereof, defining nursery stock, providing for fumigation, forbidding the bringing into the state such diseases or pests.** When the commissioner of agriculture knows or has reason to believe that any such disease, fungous growth or insect pest exists, or that there is good reason to believe that it exists, or danger is justly apprehended of its introduction into any town or city in the state, or that any dangerously injurious insect pest or fungous growth exists within this state, and has reason to believe that danger may be justly apprehended from its existence, he shall forthwith send some competent person and such agent or agents as he may deem necessary to assist in extirpating said pest or pests, disease or diseases, and the said commissioner of agriculture is hereby authorized and empowered to take such steps and do whatever may be deemed necessary to so control or prevent the spread or extirpate such pest or pests, disease or diseases. The said commissioner is hereby empowered to issue such orders and notices as he may deem necessary or proper for the purposes herein relative to such diseased nursery stock or relative to any trees, shrubs, plants, vines or their products, boxes, containers or packing material concerning which he has reasonable cause to believe are or may be infected or infested with any such disease or pest. Any person violating the provisions of any order or notice so issued by him shall be guilty of a misdemeanor. He shall cause an examination to be made at least once each year, prior to September first, of each and every nursery or other place where trees, shrubs, plants or vines, commonly known as nursery stock, are grown for sale, for the purpose of ascertaining whether the trees, shrubs, plants or vines therein kept or propagated for sale are infected with any such contagious disease or diseases or infested with such pest or pests. If after such examination it is found that the said trees, shrubs, plants or vines so examined are free in all respects from any such contagious or infectious disease or diseases, dangerously injurious pest or pests, the said commissioner or his duly authorized agent or other person designated to make such examination shall thereupon issue to the owner or proprietor of the said stock thus examined a certificate setting forth the fact that the stock so examined is apparently free from any and all such disease or diseases, pest or pests. Should any nurseryman, agent, dealer or broker, distribute or deliver within the state, trees, vines, shrubs, plants, buds or cuttings, commonly known as nursery stock, and which are subject to the attacks of insects and diseases above provided for, unless he has in his possession a copy of said certificate, dated within a year thereof, deface or destroy such certificate, or wrongfully be in possession of such certificate, he shall be guilty of a misdemeanor. All nursery stock consigned for shipment or shipped by freight, express or other means of transportation shall be accompanied by a copy of said certificate attached to each car, box, bale, bundle or package, but no nursery stock shall be sold or shipped under the certificate issued as provided herein that is not raised in the nursery for or to which the said certificate was issued until such stock has been duly examined as provided herein and found to be apparently free from any dangerously injurious insect pest or disease. Any person consigning for shipment or shipping nursery stock as above without such certificate attached or a fac simile thereof or wrongfully using such certificate or a fac simile thereof shall be guilty of a misdemeanor. All custom house brokers bringing into or causing to be brought into this state any nursery stock shall file with the commissioner of agriculture on or before October first each year the name of the person, firm, association or corporation engaged in or intending to engage in such business, together with the business address of such person, firm, association or corporation. All transportation companies, custom house brokers or other persons importing or bringing nursery stock into this state shall immediately, upon receiving such consignment, notify the commissioner of agriculture of the fact that such consignment is in their possession or is en route to some point within the state and give the name of the consignor and consignee, and the points of shipment and of destination of such consignment, and the name of the transportation company bringing such stock and the route or routes over which it was brought and shall make such further report relative to such shipments as the commissioner of agriculture may from time to time require. Any person bringing trees or other plants into this state or receiving such trees or plants from outside the state shall before unpacking the same within the state apply to and receive from the commissioner of agriculture a permit so to do; the commissioner of agriculture shall, upon being satisfied that said trees or plants so desired to be inspected are free from any dangerously injurious insect pest, disease or fungous growth, issue a certificate permitting such person to unpack such trees or plants. No person shall knowingly or wilfully bring into this state or unpack within the state gypsy or brown-tail moth or other insect pests or caterpillar, larvæ, pupæ or eggs of the same except for scientific purposes and then only upon the written consent and approval of the commissioner of agriculture. All trees, plants, shrubs, buds or cuttings, commonly called nursery stock, grown in any nursery in this state, in which San José scale has been found within two years of the date of the dissemination of said nursery stock or grown in said nursery within one-half mile of where said scale was found, must be fumigated with hydrocyanic acid gas, in such manner as may be directed by the commissioner of agriculture of this state. Such fumigation must be done by the grower of such stock before planting, dissemination or reshipment, except such trees, shrubs, plants, buds or cuttings grown in this state as are planted by the grower or propagator for himself, or such as from its nature or state of growth would be exempt; in such cases the said commissioner shall declare such trees, shrubs, plants, buds or cuttings free from such treatment. Should any nursery stock purchased within one year be found infested with San José scale on the premises of any nurseryman, it shall not be considered such an infestation as to require the fumigation of other stock not so purchased. The words "nursery stock" wherever used in this article shall apply to and include all trees, shrubs, plants, buds, scions, cuttings and vines grown in a nursery and willows grown for baskets or cuttings or for nursery or other commercial purposes. The provisions of this and the preceding section shall not apply to florists' greenhouse plants, flowers or cuttings commonly known as greenhouse stock, and no certificate shall be required for stock so shipped into the state that its sale and shipment become either interstate commerce traffic or commerce with foreign nations."

INSPECTION OF NURSERIES

Under the above section agents of the Department of Agriculture have inspected every nursery where nursery stock is grown for sale or handled, so far as known, in the state. Detailed reports from inspectors of these nurseries are filed at the office of the Commissioner of Agriculture, Albany, and, if approved, the commissioner signs and issues to each nurseryman a formal certificate of inspection which is valid until September first after date. It is then required that a copy of the certificate of inspection be attached to each car, box or package shipped or delivered and no nursery stock shall be received for shipment by any transportation company doing business in the state, unless a copy of said certificate is attached as required.

The nurseries of the state of New York subject to inspection numbered in 1911, 11,544 acres and contained approximately 14,350,000 apple trees, 6,700,000 pear trees, 1,100,000 dwarf pear trees, 8,600,000 plum trees, 10,700,000 cherry trees, 1,500,000 quince trees, 1,167,000 apricot trees, 5,100,000 ornamental trees, 13,000,000 ornamental shrubs, 6,900,000 currant bushes, 15,580,000 grapevines, 122,000 herbaceous plants, 2,116,000 gooseberry plants, and 2,000 acres of small fruit plants.

Following is a list of the nurseryman of the state of New York who received certification valid to September 1, 1912.

LIST OF NURSERYMEN

A

Adams, Mrs. Alida E., Penn Yan, R. D. 5.
Adams, Gordon, Penn Yan, R. D. 5.
Albro, E. L., Geneva.
Albro, Milton, Geneva.
Allen Nursery Co., Rochester.
Amawalk Nursery, The, Amawalk.
Ammann, Charles, Yonkers.
Anderson, S. A., Buffalo.
Anthony, W. W., Union Springs.
Arcadia Rose Co., Newark.
Arnold, W. T., Syracuse.
Ashmead, T. G., Williamson.
Aulbers, A. W., Angola, R. D. 2.
Avery, Chas. W., Patchogue.

B

Bacon Brothers, Canandaigua.
Bacon, Edward, Dansville.
Bacon, O. S., Jr., Canandaigua.
Baker, Bert, Hoosick Falls.
Ballard, Geo. M. S., Oneida.
Banker, Daniel, Dansville.
Barnes, E. W., Middle Hope.
Bates, James L., Rushville, R. D. 23.
Bebb, A. E., Newark.
Bell Brothers, Troy.

Bell, J. W., & Sons, Portland.
Bellis, D. A., Penn Yan, R. D. 2.
Benard, John, Pittsford.
Benedict Bros., Water Mill.
Benning, H. H., Clyde.
Benson, Walter, Hastings.
Bergen, C. J., Brooklyn.
Bergen, J. W., Little Falls.
Bileski, Joseph, Jr., Cohoes.
Billings & Billings, Webster.
Billings & Woodhull, Webster.
Birmingham, Thos., New Rochelle.
Black, Geo., Forestville.
Blauvelt, H., Coeymans.
Blodgett, F. H., Pultney.
Bloodgood Nurseries, Flushing.
Blount, A., Hastings.
Blowers, H. W., Westfield.
Board of Park Commissioners, Rochester.
Bobzine, Christopher, Burt.
Bogart, Wm., Marion.
Bogue, Dewane, Medina.
Bogue, Nelson, Batavia.
Bonnie Brae Nursery, New Rochelle.
Bool Floral Co., Ithaca.
Bowman, T. W., & Son Nursery Co., Rochester.
Brooks, J. R., Oxford Depot.
Brown Brothers Co., Rochester.
Brown, E. Stanley, East Moriches.
Brown, Lewis B., Bluff Point, R. D. 11.
Bryant Brothers, Dansville.
Bryant, L. J., & Son, Rochester.
Bryant, W. C., Dansville.
Buckingham, E. T., Brooklyn.
Burger, F. D., Pultney.
Burgevin, Paul J., Port Chester.
Burnett, F. J., Webster.
Burnett, Mrs. Mary, Webster.
Bush, Mrs. Lillian, Hastings.
Butler, Sarah, Penfield.
Byron, M. J., Dansville.

C

Campbell, Thos. J., Geneva, R. D. 2.
Carey, A. C., Honeoye Falls.
Carmody, M. J., Dansville.
Cartwright, I. D., Dansville.
Cass, W. & T., Geneva.
Castner, E. B., Penn Yan.
Cattan, Geo. W., Tuckahoe.
Cayuga Heights Nursery Co., Ithaca.
Cedar Hill Gardens, Sea Cliff.
Chaffee, J. N., Clay.
Charlton, John, & Sons, Rochester.
Charlton Nursery Co., Rochester.
Chase Bros. Co., Rochester.
Chase, Chas. H., Rochester.
Chase, Geo. H., & Co., Geneva.
Chase, Homer N., & Co., Geneva.
Chase Nurseries, The, Geneva.
Chase, The R. G., Co., Geneva.
Childs, John Lewis, Floral Park.
Chism, Chas. J., Rochester.
Clark, The Florist, Mt. Vernon.
Clark Nursery Co., The, Waterloo.
Clark, Oliver J., Monticello.
Cline, J. B., Rochester.
Cobb, W. F., & Co., Geneva.
Colmyer, E. R., Albion, R. D. 4.
Colvin, E. L., Fredonia.
Condon, D. R., Fayetteville.
Conrad, W. H., Cohocton.
Conservation Commission, Albany.
Cooke, John M., Tarrytown.
Cooley & Dougherty, Groveland Station.
Coop, Allen, Hastings.
Cooper, Samuel, Delevan.
Cornell, Edmund W., Clinton Corners.
Costich, Edward, Irondequoit.
Costich, Gilbert A., Rochester.
Costich, G. A., Co., Rochester.
Costich, Oliver, Irondequoit.
Costich, Sepherine, Irondequoit.
Cottage Gardens Co. Inc. Nurs., Queens.
Craver, N. F., Hastings.
Croker, Daniel, Perrysburg.
Crosby, Fred, Crosby.
Cummings, W. D., Fullers.

D

Danker, F. A., Albany.
Dansville Nursery Co., Dansville.
Darmstadt, Mrs. Wm., Hewlett.
Davie, James, Geneva.
Deady, Geo. L., North Rose.
DeFloo, Henry, Rochester.
Demary, Jackson, Geneva, R. D. 1.
Denton, C. W., & Son, Dansville.
Dickens, J. M., Spencerport.
Dildine, S. H., Union Springs.
Dimon, R. J., Hastings.
Divney, John, Geneva.
Doubleday, Page & Co., Garden City.
Dougherty, J. J., Dansville.
Dougherty, M. J., Geneva, R. D.
Driesbach, Henry, Dansville.
Driesbach, J. H., Dansville.
Dummett, Arthur, Inc., Mt. Vernon.
Dwyer, T. J., & Co., Cornwall.

E

Eaton, George, Bath, R. D. 4.
Eberle, Frederick W., Albany.
Eden Nurseries, Eden.
Eggleston, Fred J., Corinth.
Eller, A. D., Divine Corners.
Ellis, E. E., Hamlin.
Ellwanger, W. G., Rochester.
Ellwanger & Barry, Rochester.
Elmsford Nurseries, Elmsford.
Emmons & Co., Newark.
Empie, Edgar, Sharon Springs.
Empie, Louis M., Johnstown.
Empire Nursery Co., Geneva.
Empire State Nursery Co., Waterloo.
Engert, J. A., Webster.
Erickson, Oscar, Geneva.
Eschrich, Wm., Dansville.

F

Faerber, Jacob, Brighton.
Fairfield, John W., Middlesex.
Fairview Nurseries, The, Rochester.
Fagan & Son, Islip.
Farmer, L. J., Pulaski.
Ferris, Dean, Peekskill.
Ferris, Wm. A., Hastings.
Finn, J. W., Dansville.
Finn & McNeil, Dansville.
First National Nurseries, Rochester.
Flushing Nurseries Inc., Flushing.
Folger, John J., Rockville Center.
Foord, W. H., Auburn.
Foote, Joseph J., Dansville.
Ford, J. S., Pittsford.
Fordon, G. F., Geneva.
Forsythe, Wm. J., Dansville.
Foster, Emery B., Babylon.
Foster & Griffith, Fredonia.
Fowler, A. W., Brockport.
Fox, O. E., Parish.
Frankenbach, Chas. E., & Son, Southampton.
Fraser, Samuel, Geneseo.
Frasick, S. F., East Rockaway.
Fruit Growers Nursery, Newark.
Fry, John, Hastings.

G

Garden City Company, The, Garden City.
Garden City Estates, Garden City.
Gaughn, Patrick, Dansville.
Genesee Valley Nurseries, Rochester.
Geneva Nursery Co., The, Geneva.
George, D. S., Penfield.
George, James I., Penfield.
Geraghty, John, Geneva.
Giffen, J. R., Newark.
Gleason, M., New Rochelle.
Glen Brothers, Rochester.
Glynn, P. H., Geneva.
Goldsmith, F. E., Irving.
Goodelle, O., Geneva.
Goodrich, Elmer, Middlesex.
Grady, John, Hastings.
Graham Nursery Co., Rochester.
Green, C. E., Canandaigua, R. D.
Green, O. D., Syracuse.
Greens Nursery Co., Rochester.
Gregory, E. E., Penn Yan.
Gregory Nursery Co., Lockport.
Grodon, Wm., Geneva.
Grover, Frank B., Rochester.
Grover, Frederick E., & Co., Rochester.
Guenther, Fred, Rochester.
Guernsey, F. A., & Co., Schoharie.
Gurney, Hiram H., & Co., Geneva.

H

Hahn, R. F., Cornwall.
Haines, E. C., & Co., Bedford Station.
Hall, L. W., & Co., Rochester.
Hanlon & Bolger, Geneva.
Hansen, Henry, Catskill.
Harmon, The M. H., Co., Geneva.
Harris, S. G., Tarrytown.
Harrison, Ward, Irving, R. D.
Harrison, W. H., & Sons, Lebanon Spa.
Hart's Lynbrook Nursery, Lynbrook.
Hartman, Albert, Dansville.
Hartman, F. M., Dansville.
Hartman, M. G., Dansville.
Hartman, N. W., Dansville.
Hartman, W. H., Dansville.
Hatcher, John C., Amsterdam.
Hawks Nursery Co., Rochester.
Heiman, C. G., Dansville.
Heinold & Leary, Rochester.
Henry, D. H., Geneva.
Herrick, F. J., Dansville.
Herrick Seed Co., Rochester.
Hicks, Isaac, & Son, Westbury.
Higgins, W. D., Whitestone.
Higgs, Dexter, Forestville.
Hill, Henry P., Penfield.
Hitchcock, W. S., New Rochelle.

Hoag, Frank C., West Coxsackie.
Hoag, Jonathan, Johnsonville.
Hoag, J. B., Troy.
Hoffman, H. N., Elmira.
Home Planters Association, Rochester.
Hooker, C. M., & Sons, Brighton.
Hooker, Wyman, & Co., Rochester.
Hornell Nursery Co., Hornell.
Howe, Wm., Dansville.
Hubbard, T. S., Co., Fredonia.
Huested, S. B., Est., Blauvelt.
Hungerford, Victor, Dansville.
Huntington Nursery Co., Huntington.
Hutchinson & Henry, Stanley.
Hyatt, C. A., Croton-on-Hudson.

I

Ideal Nursery Co., Rochester.
International Live Plant Co., Brighton.
Irving Bros., Brighton.

J

Jackson & Hassman, Dansville.
Jackson & Perkins Co., Newark.
Jamison, F. A. & A. L., Dansville.
Jeannin, John, Jr., West Sand Lake.
Jeffries, R. P., & Son, Bellmore.
Jerome, Fred, Dansville.
Johantgen, Fred, Dansville.
Johnson, J. G., Rochester.
Josselyn, Geo. S., Fredonia.

K

Katkamier, A. B., Macedon.
Kean, B. F., & Sons, Stanley, R. D.
Kelleher, M. M., & Son, Geneva.
Kelley Bros., Dansville.
Kennedy, Fred W., Dansville.
Kenny, Edward, Geneva.
Kenny, James, Geneva.
Kenny, J. B., Jr., Geneva.
Kenyon & Wickham, Hector.
Keyel, Wm., Penfield.
Kimball, J. B., Est., Dickinson Center.
King Brothers, Dansville.
King, Martin, Dansville.
Kingsford Farms Nursery, Oswego.
Kline, J. B., & Son, Rochester.
Knapper, Frank, Yonkers.
Knight, F. E., Ripley.
Knight, Geo. L., Rushville, R. D.
Knight & Bostwick, Newark.
Knight & Struck Co., Flushing.
Kraemer Bros., Farmingdale.
Krull, Wm., & Sons, Irving.
Kusse, John A., Walworth.

L

Lacy, Leo A., Stanley, R. D.
Lake View Nurseries, Sheridan.
Lamont, T. H., Dansville.
L'Amoreaux Nursery Co., Schoharie.
LeClare Nurseries, The, Brighton.
Lenker, Charles, Freeport.
Leonard, W. S., Hilton.
Lewis Brothers, E. Rockaway.
Lewis, F. B., Portland.
Lisberg, Geo., East Hampton.
Little, T. B., & Son, Irving.
Loomis, S. H., Geneva.
Luetchford, R. D., Co., Rochester.
Lyon, A. L., Rushville, R. D.

M

Mack, H. B., Rushville, R. D.
Maloney Bros., & Wells, Dansville.
Maloney, E. H., Dansville.
Maloney, James E., Dansville.
Maney, Thos. J., Geneva.
Maple Grove Nurseries, Waterloo.
Marks, Thomas, & Co., Wilson.
Marshall Bros., Dansville.
Mathieu, Chas., Hastings.
Maurer-Haap Co., Rochester.
Mead, John, Barker.
Means, W. G., Geneva.
Menand, L., Albany.
Merrell, H. E., Geneva.
Merritt, N. G. & J. T., Dunkirk, R. D. 11.
Mertz Bros., Dansville.
Metzler, N., Fredonia.
Miller, A. L., East New York.
Miller, E. S., Wading River.
Milliott, F., Yonkers.
Milne Brothers, Islip.
Miner & Miner, Sheridan.
Mitchell, L., Jr., Pulaski.
Monroe Co. Nurseries, Rochester.
Moody, E., & Sons, Lockport.

Mooney Bros., Dansville.
Moore, Wm. C., & Co., Newark.
Morehouse, Alfred G., Bluff Point.
Morey, The J. B., Nurseries, Dansville.
Morey & Son, Dansville.
Morgan, J. A., Scottsville.
Morgan, Robert, Walker.
Morrison, Edward E., Dansville.
Mowers, B., Parish.
Murphy, Cornelius, Geneva.
Murphy, E. J., Dansville.
Murphy, W. S., Gage.
Murphy & Gregory, Dansville.

Mc

McCarthy, D. T., & Sons, Lockport.
McCartney, Harry, Dansville.
McCollough, George, Burt.
McCollum, H. T., Lockport.
McConnell, Alexander, New Rochelle.
McCredy & Corcoran, Geneva.
McDonnell, P., & Son, Geneva.
McGlennon & Kirby, Rochester.
McGraw, A. J., Geneva.
McKay, Pearl, Dansville.
McLane Bros., Dansville.
McLane, Edward, Dansville.
McLane, F. A., Dansville.
McLane, James E., Dansville.
McLane & Lamont, Dansville.
McLaughlin, O. J., Dansville.
McLegger, Charles, Parish.
McNair, C. W., Dansville.
McNair, H. R., Dansville.
McNeil, F. J., Dansville.
McNeil, M. J., & Son, Dansville.
McNeil, W. J., Dansville.
McNichols, Thomas, Geneva.

N

Nagle, J. E., Dansville.
Nellis, J. B., & Co., Rochester.
New York Agricultural Experiment Station, Geneva.
New York Central Railroad Co., Herkimer.
Nichols, G. W., Hamlin.
Nilsson, Wm., Woodlawn.
Nolan Brothers, Dansville.
North Eastern Forestry Co., Lake Clear Junction.
Northern Nurseries Co., Rochester.
Norton, J. J., Dansville.
Norton & Brown, Dansville.
Norton & Son, Dansville.
Noyes, F. J., Dansville.

O

Oak Park Nursery, Patchogue.
O'Conner, James, Dansville.
O'Hara Bros., Dansville.
O'Hara, J. M., Dansville.
O'Hara, P., Dansville.
Oliver, Mrs. N. Lewis, Lockport.
Ontario Nurseries, The, Rochester.
Ontario Nursery Co., The, Geneva.
Oughterson, N., Hall.

P

Palisades Nurseries, The, Sparkill.
Pan-American Nurseries, Rochester.
Pankok & Schumacher, Whitestone.
Parker, J. J., Fredonia.
Parks & Schaufelberger, Penfield.
Patchin, C. V., Dansville.
Pattington, Geo., & Sons, Aurora.
Peck, Henry J., & Son, Brighton.
Peck, Robert, Penn Yan.
Peet, J. Clinton, Webster.
Pendorf, S., New Rochelle.
Perrine, Fred, Dansville.
Perrine, J. R., Dansville.
Perry, Delmer, Penn Yan.
Perry, E. H., & Son, Fairport.
Perry, L. H., Clay.
Perry Nursery Co., Rochester.
Petersen, Anthon S., New Rochelle.
Peterson, E. O., Montrose.
Pierce, R. M., Oswego, R. D. 7.
Pierson, F. R., Co., Tarrytown.
Platman's Sons, J. H., Gage.
Pomeroy, Norman, Nurseries, Lockport.
Powell, E. A., Syracuse.
Pratt, A. D., Pittsford.
Pratt, J. L., Highland.
Preston, R. J., Holly.
Price, George H., Albany.
Progatzky, Gustav L., Corona.
Prospect Hill Nurseries, Castleton.
Purdy, Fred B., Keuka Park.

R

Randall, Alton, Dansville.
Rauber, Isaac, Dansville.
Rauber & Swift, Dansville.
Reed, George, Geneva.
Reed, Morton, Brockport.
Reese, Fred, Dansville.
Reilly Bros., Dansville.
Reilly, Jas. J., Groveland Station.
Reilly, P., Dansville.
Reilly, Wm., Dansville.
Retan, O. S., Bluff Point.
Rhind, Duncan, & Son, Canandaigua.
Rice Brothers Co., Geneva.
Rice, H. W., & Co., Buffalo.
Rice, T. W., Geneva.
Rich Land Nurseries, Rochester.
Roberts, George, Dansville.
Roberts & Young, Dansville.
Robinson, W. H., Flint.
Rochester Nurseries, The, Rochester.
Roesch, Lewis, & Son, Fredonia.
Root, Geo., Angola, R. D. 2.
Root, Jas. A., Nurseries, Skaneateles.
Rouse, Irving, Rochester.
Rowan, E. J., Dansville.
Rowan, James A., Dansville.
Rowehl & Granz, Hicksville.
Rowley, E. E., Dansville.
Rupert, W. P., & Son, Seneca.
Rye Nurseries, Rye.

S

Sackett Brothers, Lebanon Spa.
Salter, W. H., Rochester.
Sanderson, E. L., Bluff Point.
Sanderson, Geo., Romulus, R. D. 1.
Sauerbier Bros., Dansville.
Sauerbier, Fred J., Dansville.
Saxton, R. A., Patchogue.
Scanlan, James, Fredonia.
Schaefer, Inc., Newburg.
Schauber, Geo. R., Ballston Lake.
Schifferli, F. E., Fredonia.
Schirmer, Fred, Dansville.
Schlayer, F. M., Dansville.
Schmidt, F., Mt. Vernon.
Schrade, Henry, Saratoga.
Schubmehl & Norton, Dansville.
Schumacher, Jacob, Parish.
Schutt, L. C., Dansville.
Schutz, C., Dansville.
Schwan, F. J.., Dansville.
Scofield, R. F., Penn Yan, R. D. 5.
Scofield, W. L., Penn Yan, R. D. 5.
Sears, Henry, & Co., Geneva.
Seeley, Mrs. Nettie, J., Lycoming.
Seervelt, John, West Sayville.
Shatemuc Nurseries, Barrytown.
Shearer, Frank, & Son, Binghamton.
Sheerin's Wholesale Nurseries, Dansville.
Sheflin, George, Angola.
Sheppard, W. H., Stanley.
Sherwood, Elmer, Odessa.
Shoemaker, Ray L., Bluff Point.
Shourds, D. H., Macedon.
Shum, Joseph, Rochester.
Siebrecht & Son, New Rochelle.
Sill, A. D., Hastings.
Sill, Frank J., Hastings.
Sill, F. R., Hastings.
Sleight, C. H., Glens Falls.
Sline, John, Geneva.
Sline, P. J., Geneva.
Smith, E., & Sons, Geneva.
Smith, F. R., Geneva.
Smith, John E., Dundee, R. D. 20.
Smith, J. H., Dansville.
Smith, S. A., Geneva, R. D. 3.
Smith, W. J., Hilton.
Smith, W. & T., Co., Geneva.
Southall, H. W., Bluff Point.
Spicer, Mrs. Delia, Hastings.
Stadler, John N., Dansville.
Standard Nursery Co., Rochester.
Stanley, R. B., Odessa.
Stapleton, Lawrence, Geneva.
Stark Bros. Nursery & Orchards Co., Dansville.
Stein, F. J., Dansville.
Stein, Joseph, Dansville.
Stone, George C., Dansville.
Stork, Charles, Bluff Point.
Stuart, C. W., & Co., Newark.
Sunnyfield Nursery Co., Poughkeepsie.
Sutherland, Earl L., Penn Yan, R. D. 5.
Sutherland, W. R., Penn Yan, R. D.
Swarthout, C. E., Rushville, R. D.
Swartz, George, Dansville.
Sweet, George A., Dansville.
Swits, J. H., Hastings.

T

Taylor & Gerow, Liberty.
Taylor, H. S., & Co., Rochester.
Taylor, The H. S., Nursery Co., Rochester.
Teats, J. H., Sons, Williamson.
Terpenning & Herring, Ulster Park.
Thomas, Fred, Dansville.
Tills, Harry & Frank, Geneva.
Titus, Carl, Portland.
Titus, Fred L., Portland.

Trautman, George, Jr., Geneva.
Traver, Bertsal, Bluff Point.
Troy, J. H., New Rochelle.
True Bros., Adams Basin.
Turner, J. K., & Sons, Gage.
Tuxedo Park Association, Tuxedo.

U

Udell, Mrs. Foster, & Son, Brockport.
Uhl, Jacob, Dansville.
Ullyette Bros., Dansville.
Universal Nurseries, Geneva.

V

Van Benschoten, W. H., West Park.
Van Dusen Nurseries, The, Geneva.
Van Eps, F. E., Stanley.
Van Inwagen, C. L., Newark.
Van Ordan, C. W., Walker.
Van Scoter, J. C., Dansville.
Van Vlake, D. S., Rheims.
Vetault, Louis, East Hampton.
Vick & Hill Co., Rochester.
Vicks, James, Sons, Rochester.

W

Wade, Thos. J., New Rochelle.
Wadsworth, J. W., Hastings.
Wagner, C. E., Dansville.
Waldo, W. S., & Co., Rochester.
Washington Street Nursery, Geneva.
Webber, Chas., Rockville Center.
Weeks, Clarence H., Lyons.
Weis, Frank, Spencerport.
Welch, L., Dansville.
Welch, Patrick, Waterloo.
Welch & Swift, Dansville.
Wells, F. N., Dansville.
Wells, S. J., & Son, Fayetteville.
Western New York Nursery Co., Rochester.
Weston, H., Hempstead.
Wheeler, Irving, Lockport.
Whiteman, E. L., Dansville.
Whiteman, Milton, Dansville.
White Plains Nursery Co., White Plains.
White Plains Nurseries, White Plains.
Whiting Nursery Co., Geneva.
Whitney & Co., Geo. W., Dansville.
Wickham, Geo. A., Stanley, R. D. 3.
Wiley, H. S., & Son, Cayuga.
Will, Wm., Forestville, R. D.
Willard, S. D., Geneva.
Willett & Wheelock, North Collins.
Willey, Chas., East Patchogue.
Williams, Ira, Jamestown.
Wilson, W. J., Central Square.
Wilson, T. C., Est., Brighton.
Wood, Allen L., Rochester.
Wood Brothers, Fishkill.
Wood, Harmon, & Co., Brooklyn.
Wood, Jay, Knowlesville.
Wood, J. W., Dansville.
Worden, Mont, Fayetteville.
Wright, E. M., Geneva.
Wright, H. W., & Son, Webster.
Wyatt Brothers, Geneva.

Y

Yates, C. L., Rochester.
Yonkers Nursery Co., Yonkers.
York, D. S., Stanley.
Young, Frank L., Lockport.
Young, Fred, Dansville.
Young, T. F., Marion.
Younglove, H., Hastings.

Z

Zeller, Chas., & Son, Brooklyn.
Zerfass, Byron A., Dansville.

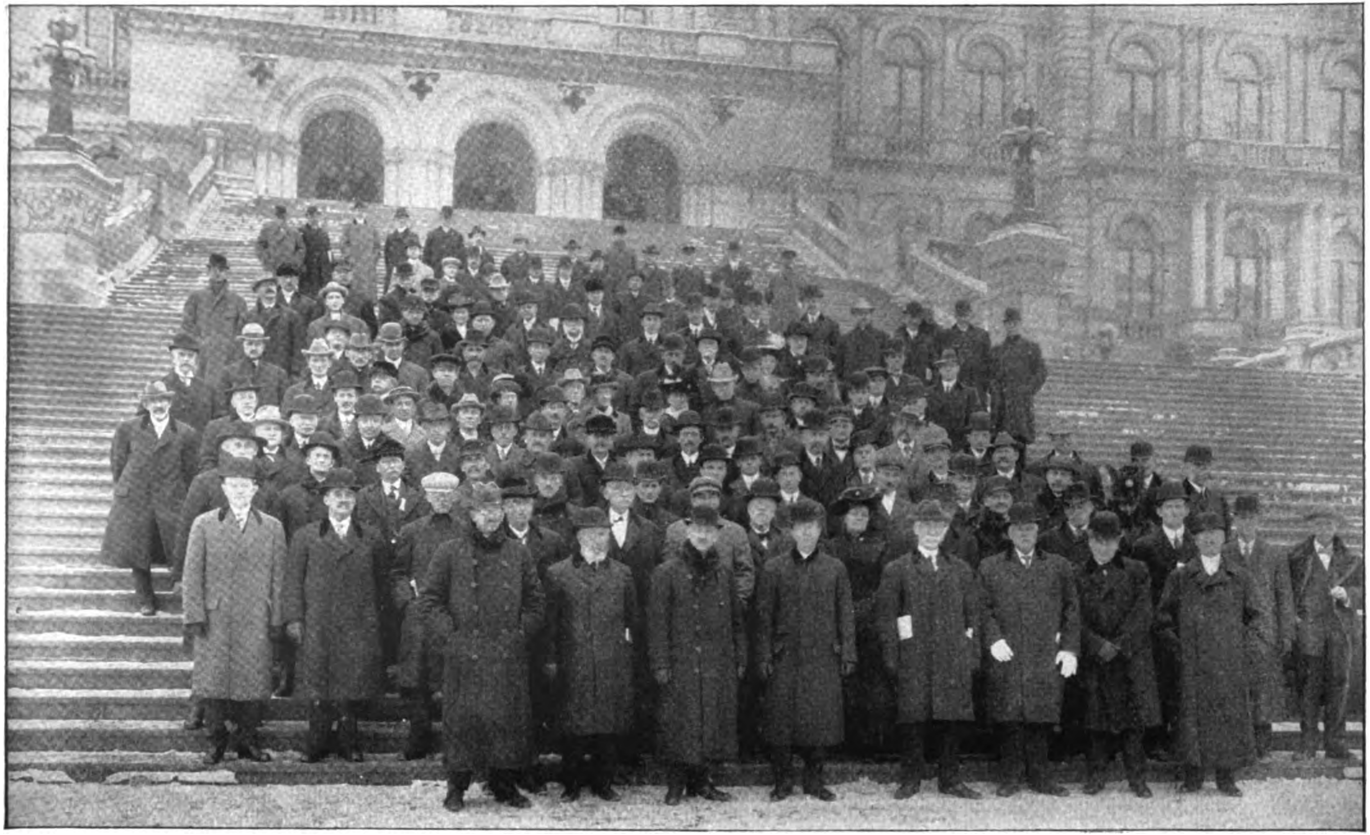

Fig. 42.—Group of Members of New York State Agricultural Society.

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE
CALVIN J. HUSON, Commissioner

Bulletin 35

Proceedings of the Seventy-second Annual Meeting of the New York State Agricultural Society

In Cooperation with the State Department of Agriculture

INCLUDING JOINT SESSIONS WITH

The New York State Breeders' Association, The New York State Association of County Agricultural Societies and Union Agricultural Societies of the State of New York

1912

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OFFICERS FOR 1912

PRESIDENT

George W. Sisson, Jr., Potsdam.

VICE-PRESIDENTS

First District.— J. J. Dillon, New York.
Second District.— Ezra Tuttle, Eastport.
Third District.— Gilbert M. Tucker, Albany.
Fourth District.— C. Fred Boshart, Lowville.
Fifth District.— W. R. Smith, Syracuse.
Sixth District.— O. U. Kellogg, Cortland.
Seventh District.— W. C. Barry, Rochester.
Eighth District.— Clark Allis, Medina.
Ninth District.— Dr. G. H. Davison, Millbrook.

SECRETARY

A. E. Brown, Batavia.

TREASURER

H. B. Winters, Albany.

EXECUTIVE COMMITTEE

E. W. Catchpole, North Rose.
Edwin H. Chapman, Albany.
A. Denniston, Washingtonville.
A. R. Eastman, Waterville.
Dr. Edward Moore, Albany.
F. W. Sessions, Utica.
E. Van Alstyne, Kinderhook.
W. W. Ware, Batavia.
T. B. Wilson, Hall.

STANDING COMMITTEES

AGRICULTURAL EDUCATION

Chairman, Raymond A. Pearson, Ithaca.

Thomas E. Finegan, Albany.
George G. Royce, Macomb.
Gilbert M. Tucker, Albany.
W. H. Vary, Watertown.

LEGISLATION

Chairman, C. Fred Boshart, Lowville.

Dr. G. Howard Davison, Millbrook.
Aug. Denniston, Washingtonville.
T. Harvey Ferris, Utica.
J. M. Lupton, Mattituck.
Edwin A. Merritt, Jr., Potsdam.
T. B. Wilson, Hall.

PUBLICITY

Chairman, F. W. Sessions, Utica.

C. W. Burkett, New York City.
Harry B. Winters, Albany.

MARKETING, TRANSPORTATION AND GRIEVANCES

Chairman, John J. Dillon, New York City.

P. H. Burnett, New York City.
E. H. Dollar, Heuvelton.
H. O. Palen, Highland.
E. A. Powell, Syracuse.
Jared Van Wagenen, Jr., Lawyersville.
W. W. Ware, Batavia.

DEVELOPMENT OF AGRICULTURAL RESOURCES

Chairman, William Cary Sanger, Sangerfield.

Dean L. H. Bailey, Ithaca.
Dean H. E. Cook, Canton.
Dr. Boothe C. Davis, Alfred.
Loton Horton, New York City.
Calvin J. Huson, Albany.
Dr. W. H. Jordan, Geneva.
Edward Van Alstyne, Kinderhook.
W. Wadsworth, Jr., Mt. Morris.

TAXATION AND BANKING

Chairman, Clark Allis, Medina.

W. N. Giles, Skaneateles.
T. Harvey Ferris, Utica.

COOPERATION

Chairman, Ezra A. Tuttle, Eastport, L. I.

Rev. Brother Barnabas, Lincolndale.
F. N. Godfrey, Olean.
Dennis McCarthy, Albany.
C. R. White, Ionia.

MEMBERSHIP

Chairman, William Church Osborn, New York City.

A. L. Brockway, Syracuse.
Edwin H. Chapman, New York City.
James A. D. S. Findlay, Salisbury Mills.
Samuel Fraser, Geneseo.

PRESIDENTS

1841	Joel B. Nott*	Guilderland.
1842	James S. Wadsworth*	Geneseo.
1843	James S. Wadsworth*	Geneseo.
1844	John P. Beekman*	Kinderhook.
1845	Benjamin P. Johnson*	Albany.
1846	John M. Sherwood*	Auburn.
1847	George Vail*	Troy.
1848	Lewis F. Allen*	Black Rock.
1849	John A. King*	Jamaica.
1850	Ezra D. Prentice*	Albany.
1851	John Delafield*	Oakland.
1852	Henry Wager*	Utica.
1853	Lewis G. Morris*	Mount Fordham.
1854	William Kelly*	Rhinebeck.
1855	Samuel Cheever*	Elmira.
1856	Theodore S. Faxton*	Utica.
1857	Alonzo S. Upham*	Le Roy.
1858	William G. McCoun*	Syracuse.
1859	Abraham B. Conger*	Waldberg.
1860	Benj. N. Huntington*	Rome.
1861	George Geddes*	Fairmount.
1862	Ezra Cornell*	Ithaca.
1863	Edward G. Faile*	New York.
1864	James O. Sheldon*	Geneva.
1865	Theodore C. Peters*	Darien.
1866	John Stanton Gould*	Hudson.
1867	Marsena R. Patrick*	Sacketts Harbor.
1868	Thomas Hall Faile*	New York.
1869	Samuel Campbell*	New York Mills.
1870	Solon D. Hungerford*	Adams.
1871	Richard Church	Belvidere.
1872	Milo Ingalsbe*	South Hartford.
1873	Benjamin F. Angel*	Geneseo.
1874	Harris Lewis*	Frankfort.
1875	Alexander S. Diven	Elmira.

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* Deceased.

1876	Edwin Thorne*	New York.
1877	Patrick Barry*	Rochester.
1878	George W. Hoffman	Elmira.
1879	Horatio Seymour*	Utica.
1880	N. Martin Curtis*	Ogdensburg.
1881	Robert S. Swan*	Elmira.
1882	John D. Wing*	New York.
1883	George F. Mills*	Fonda.
1884	William M. White*	Canaseraga.
1885	James W. Wadsworth	Geneseo.
1886	James McCann*	Elmira.
1887	James Geddes*	Fairmount.
1888	W. A. Wadsworth	Geneseo.
1889	James Wood	Mount Kisco.
1890	James Wood	Mount Kisco.
1891	O. B. Potter*	New York.
1892	O. B. Potter*	New York.
1893	J. B. Dutcher	Pawling.
1894	J. B. Dutcher	Pawling.
1895	I. P. Roberts	Ithaca.
1896	I. P. Roberts	Ithaca.
1897	Benjamin F. Tracy	New York.
1898	Benjamin F. Tracy	New York.
1899	Timothy L. Woodruff	Brooklyn.
1900	Timothy L. Woodruff	Brooklyn.
1901	John H. Farrell*	Albany.
1902	F. E. Dawley	Fayetteville.
1903	F. E. Dawley	Fayetteville.
1904	F. E. Dawley	Fayetteville.
1905	Gilbert M. Tucker	Albany.
1906	Gilbert M. Tucker	Albany.
1907	James H. Durkee*	Sandy Hill.
1908	James H. Durkee*	Sandy Hill.
1909	Raymond A. Pearson	Ithaca.
1910	Raymond A. Pearson	Ithaca.
1911	Raymond A. Pearson	Ithaca.
1912	George W. Sisson, Jr.	Potsdam.

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*Deceased.

CONSTITUTION

The style of this society shall be "The New York State Agricultural Society." Its object shall be to improve the condition of agriculture, the rural household and mechanic arts.

Section 1. The society shall consist of such citizens of the state as shall signify in writing their wish to become members and shall pay, on subscribing, not less than one dollar and annually thereafter one dollar; and also of honorary and corresponding members. The presidents of state associations actually working for the improvement of the various branches of agriculture, the presidents of county and town agricultural societies, or a delegate from each shall, ex-officio, be members of this society. The payment of ten dollars or more, as fixed by the executive board, shall entitle the donor to life membership and shall exempt him from annual dues.

Section 2. The officers of the society shall consist of a president, nine vice-presidents, one to reside in each judicial district of the state, a secretary, a treasurer and an executive committee of eight additional members. The executive board shall consist of the officers above named; eleven members of the board shall constitute a quorum.

Section 3. The president shall preside at all meetings of the society and of the executive board. In his absence a vice-president shall be named by the meeting as presiding officer.

Section 4. The secretary shall keep the minutes of the meetings of the society and the executive board; he shall conduct all correspondence in behalf of the society.

The treasurer shall keep the funds of the society and disburse them on the order of the executive board, or a duly appointed subcommittee thereof, countersigned by the president of the society, and shall make a report of the receipts and expenditures at the annual meeting in January.

The executive board shall transact the general business of the society and shall perform such other duties as shall seem best calculated to promote the objects of the society.

Section 5. There shall be an annual meeting of the society on the third Wednesday in January, in the city of Albany, at which time all the officers shall be elected by a plurality of votes and by ballot.

The executive board shall have power to fill any vacancies which may occur in the offices of the society during the year. The society may be convened in special meeting by the executive board and fifteen members shall constitute a quorum. No person shall be qualified to vote at any election of officers of the society unless he shall have been a life member for at least thirty days prior to the holding of such election.

Section 6. No officer of the society shall receive any pecuniary compensation for services rendered to or for the society, except on the authority of the society granted at a regular annual meeting.

Section 7. The constitution may be amended by a vote of two-thirds of the life members present at an annual meeting.

PROGRAM

GENERAL SUBJECT

COSTS AND PRICES OF FARM PRODUCTS AND HOW TO BRING ABOUT CLOSER TRADE RELATIONS BETWEEN PRODUCERS AND CONSUMERS

Opportunity will be provided for discussion of papers, which are to be brief for this purpose.

Tuesday, January 16, 10 a. m.

IN THE ASSEMBLY PARLOR

Report of Committee on Publicity
Chairman, F. W. Sessions, Utica

Report of Committee on Legislation
Chairman, Hon. C. Fred Boshart, Lowville

TEN-MINUTE PAPERS ON:

Cost of Producing Cauliflower
J. Frank Dimon, Secretary, Long Island Cauliflower Association, Riverhead

Cost of Producing and Marketing Asparagus
W. Y. Velie, Marlboro

Cost of Producing Apples
Timothy Costello, Penn Yan
B. J. Case, Sodus

The Albany Public Market
Edward J. Marsden, Albany

2:30 p. m.

IN THE ASSEMBLY PARLOR

Cost Accounting on Farms
G. F. Warren, Professor of Farm Management and Farm Crops, State College of Agriculture at Cornell University

Banking in Its Relation to the Farmer
Senator T. Harvey Ferris, Vice-President of the Citizens Trust Co., Utica

The Relation Between Railroad Rates and the Cost of Products to the Consumer
F. S. Welsh, Agriculturist, New York Central Railroad, New York City
F. R. Stevens, Agriculturist, Lehigh Valley Railroad, Geneva

8 p. m.

IN THE SENATE CHAMBER

Joint Session with the New York State Breeders' Association
Governor John A. Dix *presiding*

PRAYER

Rev. James S. Kittell, First Reformed Church, Albany

Annual Address of the President of the New York State Agricultural Society
Raymond A. Pearson, Albany

Annual Address of the President of the New York State Breeders' Association
George W. Sisson, Jr., Potsdam

The New York Food Investigating Commission
Hon. William Church Osborn, Member of the New York Food Investigating Commission, New York City

The Ability of the Consumer to Reduce the High Cost of Living by Purchase of Foods
Dr. Ira S. Wile, Member of the Advisory Board of the Food Committee, National Consumers' League, New York City

Wednesday, January 17, 9 a. m.

IN THE ASSEMBLY PARLOR

Report of the Secretary
E. H. Chapman

Report of the Treasurer
W. B. Jones

MISCELLANEOUS BUSINESS
ELECTION OF OFFICERS

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10 A. M.

IN THE ASSEMBLY PARLOR

The Cost Problem on the Dairy Farm
E. H. Dollar, Heuvelton

Report of Committee on Agricultural Education
Chairman, Wing R. Smith, Syracuse

Cost of Producing Alfalfa
James A. D. S. Findlay, Salisbury Mills

Cost of Producing Potatoes
A. E. Nichols, Java

Cost of Producing Truck Crops
W. W. Ware, Batavia

Cooperative Buying and Selling
W. N. Giles, Secretary, New York State Grange, Skaneateles

Report of Committee on Development of Agricultural Resources
Chairman, Hon. William Cary Sanger, Sangerfield

Benefits of the Long Island Potato Exchange
H. R. Talmadge, President, Long Island Potato Exchange, Riverhead

The Cost-of-Living Problem in Congested City Districts
J. W. Pincus, Secretary, Federation of Jewish Farmers of America, New York City

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2 P. M.

IN THE ASSEMBLY PARLOR

Joint Session with the New York State Breeders' Association
President George W. Sisson, Jr., *presiding*

QUESTION BOX

2:30 P. M.

Cost of Milk Production
Albert Manning, Otisville
Homer H. Jones, Homer

Cost of Producing Poultry and Eggs
H. O. Palen, Highland

Cost of Pork Production
Calvin J. Huson, Vice-President, New York State Breeders' Association, Penn Yan

Cost of Mutton Production
C. S. Plumb, Professor of Animal Husbandry, Ohio State University, Columbus, Ohio

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8 P. M.

IN THE SENATE CHAMBER

Joint Session with the New York State Breeders' Association
Lieutenant-Governor Thomas F. Conway *presiding*

The Cost-of-Living Problem
Hon. William J. Gaynor, Mayor of New York City

The Canadian Fruit Marks Act
Hon. J. A. Ruddick, Dairy and Cold Storage Commissioner, Ottawa, Canada

Remedies for High Prices
Hon. Samuel Lewis Shank, Mayor of Indianapolis

Thursday, January 18, 10 a. m.

IN THE ASSEMBLY PARLOR

Report of Committee on Marketing, Transportation and Grievances
Chairman, EZRA A. TUTTLE, Eastport

A Practical Producers' and Consumers' League
EZRA A. TUTTLE, Eastport

Experience of the Boston Cooperative Milk Producers' Company with the Sherman Anti-Trust Act
STANLEY H. ABBOTT, President, Wilton, N. H.

Cooperative Marketing
W. H. INGLING, General Manager, Monmouth County Farmers' Exchange, Freehold, N. J.

The Producer and the Consumer
Hon. A. P. SANDLES, Secretary, Ohio State Board of Agriculture, Columbus, Ohio

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2:30 P. M.

IN THE ASSEMBLY CHAMBER

Joint Session with New York State Breeders' Association, New York State Association of County Agricultural Societies and Union Agricultural Societies of the State of New York
Hon. EDWIN A. MERRITT, JR., Speaker of the Assembly, *presiding*

Live Stock at Fairs
F. C. MINKLER, Professor of Animal Husbandry, New Jersey State Agricultural Experiment Station, New Brunswick, N. J.

Improvement of County and Town Fairs
Hon. A. P. SANDLES, Secretary, Ohio State Board of Agriculture and Secretary of Ohio State Fair, Columbus, Ohio

Conditions and Theories
J. P. E. CLARK, Manager, Binghamton Industrial Exposition, Binghamton

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4:30 P. M.

FINAL BUSINESS SESSION

Report of Committee on Resolutions

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8 P. M.

IN THE ASSEMBLY CHAMBER

Home Makers' Session in Cooperation with the Woman's Club of Albany, Albany Mothers' Club and Central Christian Mothers' Union
Patroness, Mrs. JOHN A. DIX

How a Knowledge of Food Values Will Help the Housewife Reduce the Cost of Living
Prof. MARY D. SWARTZ ROSE, School of Household Arts, Columbia University, New York City

Wholesale Buying by Neighborhood Clubs
Mrs. BLEECKER BANGS, Brooklyn

How City People May Buy Direct from the Producer
HARRY B. WINTERS, Department of Agriculture, Albany

The Housewife and the Cost of Living
Prof. MARTHA VAN RENSSELAER, State College of Agriculture at Cornell University

Weights and Measures
Dr. FRITZ REICHMANN, State Superintendent of Weights and Measures, Albany

SOCIETIES COOPERATING

NEW YORK STATE BREEDERS' ASSOCIATION
President, George W. Sisson, Jr., Potsdam

NEW YORK STATE ASSOCIATION OF COUNTY AGRICULTURAL SOCIETIES
President, John A. Kloepfer, Buffalo

UNION AGRICULTURAL SOCIETIES OF THE STATE OF NEW YORK
President, George I. Wilber, Oneonta

THE WOMAN'S CLUB OF ALBANY
President, Mrs. Elmer Blair, Albany

ALBANY MOTHERS' CLUB
President, Mrs. Robert C. Wagner, Albany

CENTRAL CHRISTIAN MOTHERS' UNION
President, Mrs. Charles F. Stowell, Albany

ANNUAL MEETING

In the Capitol, Albany, January 16–18, 1912

TUESDAY, JANUARY 16

Morning Session

President Raymond A. Pearson called the meeting to order in the Assembly Parlor, Tuesday, January 16, at 10 a. m.

The President: We hope that the members, delegates and visitors will see for themselves that a warm welcome awaits them in the city of Albany on the occasion of this meeting. To-night the Governor of New York will welcome us. For that reason we have omitted a formal address of welcome at this first session. I merely call your attention to the fact that this is one of the very few organizations having extended to it practically the unlimited privileges of the New York State Capitol, in which it holds its annual meeting.

Persons desiring to join the State Agricultural Society should see the secretary, Mr. Chapman, or the treasurer, Mr. Jones. The life membership fee, as provided by the constitution, is ten dollars. The annual membership fee, with limited privileges, is one dollar. All who are particularly interested in the advancement of our agriculture are invited to become members of the society.

We believe this program is one of the best that has ever been provided for any agricultural meeting. Every minute of our time can be spent to great advantage, and there will be none too many minutes.

Mr. Sessions offered a resolution that all officially selected delegates be extended all the privileges of the meeting, except voting for officers and on matters involving the funds of the society, unless a standing vote be called for, when only life members should be entitled to vote, as provided by the constitution. This was unanimously adopted.

Mr. Tuttle offered a resolution that a committee of five be appointed by the president to act as a committee on resolutions, and that all resolutions presented at this meeting be in writing, the title to be read, and then referred to the Committee on Resolutions without debate. This was unanimously adopted.

The president appointed as the Committee on Resolutions: T. B. Wilson, Hall; F. N. Godfrey, Olean; A. E. Brown, Batavia; G. W. Sisson, Jr., Potsdam; Ezra Tuttle, Eastport, L. I.

Mr. Ward moved that the president appoint five members to serve as a committee on nomination of officers. This was adopted.

The president requested that suggestions be handed him of names of members to serve on the Committee on Nominations, deferring for a time the appointment of the committee.

THE PRESIDENT: The first item on our program is a report of the Committee on Publicity, and in presenting the chairman of that committee I want to say that it has surprised me to observe during the past year how much time a man of large business affairs could and would devote to the unpaid service of a committee of any organization. The chairman of this committee is an example of that kind of service — Mr. Sessions, chairman of the Publicity Committee.

REPORT OF PUBLICITY COMMITTEE

F. W. SESSIONS

During the past year your committee has held no regular meetings and has been able to do little to advertise New York State and its agricultural possibilities, because of the fact that it has had no funds at its command with which to carry out this necessary work. Nevertheless, our state and its agricultural advantages have been brought out more advantageously than has ever been done before.

Western states, counties and cities, ably supported by their horticultural societies, boards of trade, private irrigation and land companies, and railroads, made elaborate plans for a show of their products at the Land and Irrigation Exposition held at Madison Square Garden, New York City, from November 3 to 12, 1911. They had on exhibition a bewildering variety of carefully selected fruits, grains, and the products of their sections. Trained attendants passed out alluring literature, some of it superbly illustrated, while lecturers did missionary work among the persons who visited the exposition. The design of all this was, of course, to take

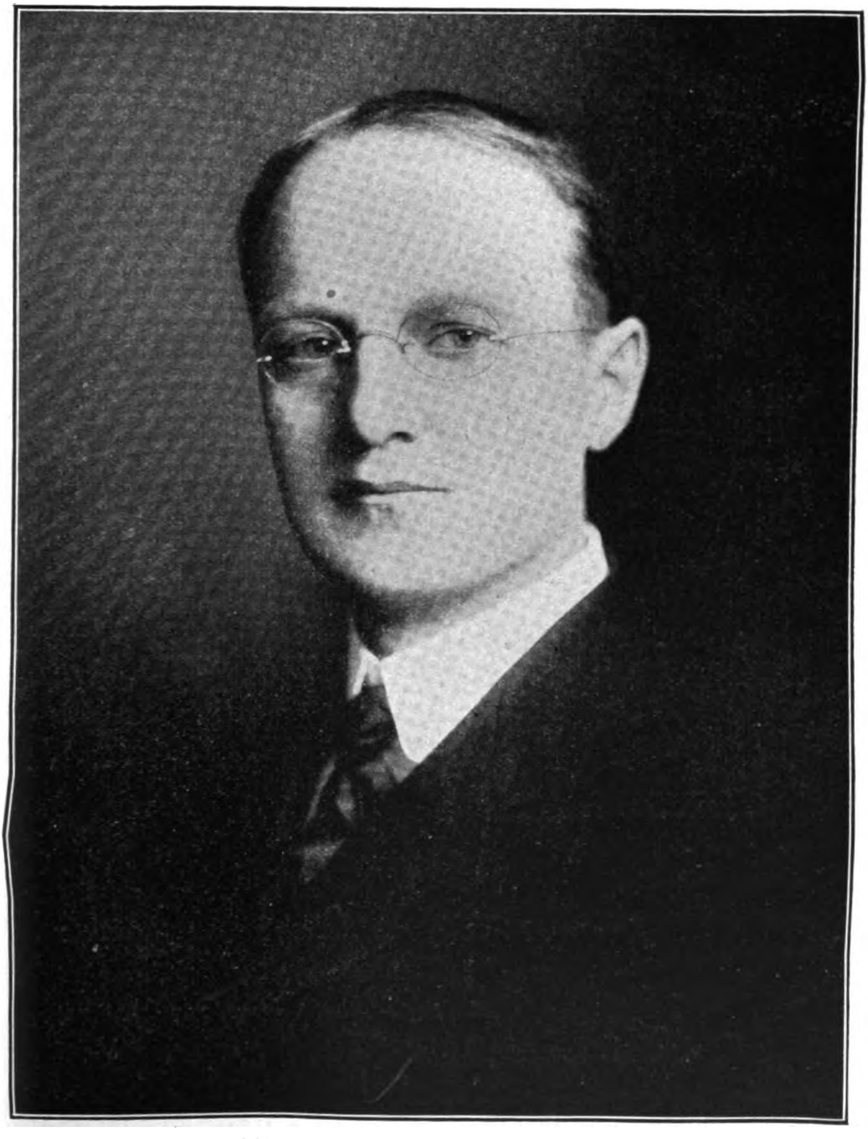

FIG. 43.— RAYMOND A. PEARSON, PRESIDENT OF NEW YORK STATE AGRICULTURAL SOCIETY, 1909–1911.

people from our state and there is no doubt that this design, looking at it from their standpoint, was largely successful. That success was greatly limited, however, through the hard work and untiring efforts of one of the most capable and efficient commissioners of agriculture New York State has ever had. By his efforts, an appropriation of ten thousand dollars was secured from our legislature and this amount was augmented by generous contributions, the New York State Grange subscribing five hundred dollars, the Western New York Horticultural Society, two hundred and fifty dollars, the New York State Fruit Growers' Association, two hundred and fifty dollars, while the New York Central Railroad subscribed one thousand dollars in cash and furnished free transportation of all products and materials, as well as the able services of Mr. Welsh of their farm bureau, their total contribution being equivalent to three thousand dollars. These sums were used to have New York State represented at the exposition.

A committee, with Commissioner Pearson as chairman, was appointed and W. F. Hamilton was called on to suggest plans and superintend the construction and decoration of the booth, the result being that the booth was one of the handsomest in the Garden. It contained a district schoolhouse, with the usual seats, blackboard, bell, teacher and pupils, while on the blackboard at frequent intervals were written by the pupils facts pertaining to New York State agriculture. This department was in charge of Dr. H. J. Webber and was one of the features of the exhibit. Under the efficient supervision of L. S. Tenny, a splendid exhibition of fruits was arranged, while F. N. Godfrey, F. S. Welsh and Major Riddell provided a remarkably fine display of general fruit products. George W. Sisson, Jr., assisted by W. E. Griffith and Horace Rees, had charge of one of the best exhibits of dairy products that it has ever been the pleasure of your committee to see. S. D. House's demonstration of bees was also the attraction to many of the people. S. C. Shaver, secretary of the State Fair Commission and of the committee, did loyal work in all the departments, while valuable aid was rendered by many others.

Good literature for free distribution was provided, while moving picture machines showed New York farms, buildings and orchards to advantage. This campaign of education brought out many astonishing facts, one of them being how little our own people know about New York State and its agricultural possibilities. It likewise convinced your committee that if we hope to keep our rural population, we must adopt some tactics which will place before every one of them the actual facts and conditions in regard to New York State. Even the Western exhibitors were surprised by the magnitude of this exhibit and freely acknowledged that it was so effective that it destroyed much of the value of their campaign.

The condition we face is serious. With some of the best farms, the richest soil and with close proximity to markets and magnificent transportation, our rural population is decreasing. While a small portion of this loss is doubtless a gain to our cities, the larger percentage is due to the tremendous efforts being made by Western and Southern states to draw our farmers away from us, to purchase lands at inflated prices, to cultivate crops by methods unfamiliar to them, to live in a society to which they are unaccustomed and to find confronting them transportation and water problems which they do not encounter here. If this condition is to be stopped, it must be stopped now. It is not because the West offers better opportunities; it is because it is better advertised. Canada is going right into Western territory and taking farmers by the thousands. Part of this is due to advertising, but it is mainly because of the dissatisfaction which the Western farmer feels.

Your committee respectfully suggests for your consideration that some one of the following plans be adopted, if we are to hold our rural population:

We should have exhibitions throughout the Western states, more exhibitions right here in our own towns and cities. We should let our own people and people of other states know in just what respects New York stands out alone in a class by itself.

We should advertise in the Western papers and magazines, educate and continue to educate the West concerning our possibilities. If this were done, not only would the drain from which we now suffer be stopped, but there would be a returning tide which each year would swell to larger proportions. It is not because the West has superior natural advantages that it takes our farmers from us, but because it presents what advantages it has in a superior way. This we must overcome.

To a very large extent the future of agriculture in New York State is in the hands of the editors of state papers. Keenly realizing this fact, your committee has taken the opportunity occasioned by this meeting to extend to editors of every state paper a hearty invitation to be present with us, so that they could join us and give us the advantage of their advice. The editors of our state papers are vitally interested with us, not only in holding our present agricultural population, but in increasing it, and we believe they are willing to assist us to the full extent of their power. But what will we do to assist them? Your committee believes that there should be established, in connection with the State Agricultural Department, a farm press bureau for the purpose of preparing matter for publication in our state papers, treating of good roads, better schools, our markets, transportation, soils, seeds, fruit and general crop growing, fertilizers, animal feeding and other agricultural matters of vital importance to New York State farmers. We also suggest that it is important that this should be set up in the form of plate matter and these plates be furnished our state papers without charge. Many of our country papers cannot afford, even though they would like to do so, to set up several columns of such matter, but we believe they would welcome a plan whereby they could furnish matter to their readers which would be of direct interest to them, would result in increasing their subscriptions and their advertising value. Doubtless editors will be willing, in such an event, to devote some space to editorials calling attention to these features and doing all in their power to educate our people and their subscribers as to the superior advantages of New York State. It would be well to associate every editor of a state paper with this body and we also believe that these editors should be closely identified with your Publicity Committee. We feel, as well, that some one of the Commissioner's assistants should be selected as chairman of your Publicity Committee, as few men in active business can devote to the work sufficient time and thought to produce the most effective results.

Your committee is at present without funds. Its hands are, therefore, tied, its usefulness limited. It is imperative if this committee be continued that an effort be made to provide funds to make its work effective. We believe a direct appeal to each member of our organization to furnish us with names of ten persons who would unite with us would furnish us with new blood and these, in turn, could be followed up in a like manner. At the same time, while securing new members and additional funds, we should likewise be enabled to carry on an aggressive campaign of education among our new members, the value of which it would be impossible to overestimate.

These are suggestions which have occurred to your committee and which we respectfully submit to you.

The vital facts before us now are that our agricultural population is decreasing; that good men and immense sums of money are being withdrawn, resulting in a direct loss to those who remain and a direct loss in many instances to those who leave; that, in order to stop this drain, something must be done to counteract it by methods which Western states have found successful; that, in order to do this, it is essential that we have funds and that those funds be raised promptly.

THE PRESIDENT: I will now call on the chairman of the Committee on Legislation, Honorable C. Fred Boshart, to report.

REPORT OF COMMITTEE ON LEGISLATION

C. FRED BOSHART

This society is asked to approve of many suggestions and recommendations for legislative enactments. These recommendations have merit and many ideas have been worked out in a painstaking and thorough manner. Should we enact into law every conceivable idea, it would soon lead to a congestion of conditions that would be untenable.

Too many laws make the statutes cumbersome; complex laws, unintelligible; therefore, our aim should be to simplify and not complicate. A law should be worded in so plain and simple a way, that no person can mistake its meaning, no court be required to interpret its purpose, and no provision be made for a hiding place for some crook, with two or three constructions on its phraseology. This society should approve, first, of those enactments and amendments which are urgent, second, of those which are demanded, that we may better subserve the varied interests of this great state. The annual appropriation of moneys for the agricultural development of New York State is a magnificent recognition of the one interest which has done more in creating its wealth than all others.

The legislature of 1911 enacted three laws of great interest, and all along lines for which this society has stood, namely: The law creating the advisory board in reference to agricultural education; the law to provide for a food investigating commission; and a law providing for demonstration of our agricultural resources.

Agricultural education I consider the most important subject before our people to-day. On the conservation of our agricultural resources will depend the future prosperity of the state. No greater legacy can be left the coming generation than agricultural knowledge, which furnishes man with a better perception of the economic principles that promote plant life and the conditions under which the soil will best give up its vast stores of wealth. The Food Investigating Commission in this state has afforded a great opportunity for scientific study of the price of food commodities. When this commission reports we hope to know who receives the profits between the producer and consumer. We hope for recommendations by which the producer will receive his just share for his labors and the consumer, as well, be relieved.

The demonstration of our agricultural resources will illustrate the capabilities of this state and prove an incentive for a movement back to the farm and an encouragement to all who may be looking for a permanent settlement to locate within our borders.

PROF. FRASER: In regard to the first report, I feel that our talking part has not been as extensive as it might have been, that is, advertising our products. I think if they are properly advertised our state will fill up fast enough. We want to be able to sell what we have to better advantage. The problem is to get the stuff to the consumer.

MR. WARD: As a member of the Publicity Committee, I want to compliment Mr. Sessions on the excellent report he has made this morning.

I was interested in that part of the report which refers to an undertaking to get closer to the editors of our papers. I move that the chair appoint a committee at this meeting to attend the regular meetings of the editorial associations, to undertake to bring them into closer contact with the work of this society in publishing reports of New York agriculture.

This motion being carried, the president appointed Mr. F. W. Sessions as a committee of one to attend the meetings of the editors' associations.

The President: That presents a brand new question to the agricultural people of New York. Shall we lay aside some of our agricultural modesty? All these years we have been quietly going on, producing our crops, and saying nothing; whereas, in other sections of the country, they have been producing nothing and saying much. That is a little exaggerated, but if somebody in Idaho sends a box of fine apples to the president of the United States, it goes all over the country that Idaho is the best apple-producing state in the Union, whereas, New York State has fine apples and is sending them to many parts of the world. Now, shall we cooperate with the papers having agricultural circulation and city circulation as well; shall we engage in a campaign of publicity of this kind?

Mr. Russell: I think that we can all profit by what some of the other states are doing. In Michigan they have recently organized two development bureaus, which are made up of the different counties in the two different sections, one eastern and the other western. They have been in operation about three years. Funds are raised by appropriations from individual counties. They have a paid secretary and two or three members from each county who work without pay. These men are not real estate men; they are men who are interested in the development of their particular counties. These bureaus, through their secretaries, from time to time get out a great deal of printed matter, advertising those different sections. This matter is sent to the different papers throughout those sections, and it is published and prized quite highly by the papers. They have recently held in Grand Rapids the first apple show in Michigan, conducted by the Western Michigan Development Bureau and also by one of the Grand Rapids papers. It more than paid expenses, and their attendance was far more than they anticipated.

New York State can well afford to do a little advertising, and that motion which has just been made for the appointment of a committee is a very good one. The first thing to do is to educate your own people as to what your state is actually doing and what it can do, and they will soon tell others.

THE PRESIDENT: You now have before you the reports of the two committees, still unacted upon. What shall we do with these reports?

The chair hopes you will not let these matters pass over too lightly. There are some important suggestions contained in the two reports, matters which involve the agricultural policy of our state, matters which concern every farmer of the state.

MR. TUTTLE: The chairman of the Committee on Legislation omitted in his report to mention a bill which was introduced in the legislature last year through his committee, but which failed of passage in the assembly. It was popularly known as the "Collin Bill." It was a bill intended to protect producers in the matter of marketing their products; it was recommended to this society by the Committee on Marketing, Transportation and Grievances. I think it was not sufficiently understood by the people of this state and by their representatives in the legislature. It provided for the bonding of commission men. Among other things it provided that they should make prompt returns to the shippers, giving the names and addresses of purchasers. The weak point with us is the marketing of our produce. It is not a question of producing; it is not so much a question of publicity; the people of this state know full well that this is a rich state, that it is capable of producing great quantities of foodstuffs. How can the people who would be glad to eat apples, for instance, get them at anything like a fair price? There are hundreds of thousands of bushels of apples in this state that practically go to waste because they cannot go to the consumers at anything like a reasonable price. We have fallen into the hands of the Philistines. We are at the mercy of commission men, speculators, jobbers, and all kinds of middlemen, who consume our substance and, at the same time, make the price to the consumer most exorbitant.

We must do something to eliminate this army of middlemen which is gobbling up about seventy per cent. of the consumer's dollar. It is all done within about a week's time, between the time that the stuff is shipped from the farmer and the time it gets into the hands of the consumer. We farmers work all the year to produce, and when we ship our stuff we say good-by to it. We are no longer masters of our own business. We must do something in order to get our produce into the hands of consumers at a reasonable price.

MR. GODFREY: It seems to me that the section of that report pertaining to the means for carrying on this campaign is worthy of very serious consideration. We all know that we must have the money to pay the expenses of such a campaign. The committee that has this in charge should be able, during this session, to devise some method whereby the association can secure sufficient funds for carrying on this campaign work.

MR. BOSHART: We passed resolutions at the meeting a year ago to ask state aid for this society. The matter was taken up with the leaders of the majority last winter, but they told us that the demands on the state were so great, that the appropriations for agricultural purposes had reached such a large amount that the demands could not be then granted.

MR. MORRELL: I was quite active in regard to this legislation committee. The committee from the New York State Fruit Growers' Association and a joint committee from the assembly and senate sat in this room. We had from seventy-five to one hundred fruit growers, some from Western New York, some from the Hudson River. We had from seventy-five to one hundred cases where we could show that the producer had been cheated out of from twenty-five to fifty per cent. of the sales of his goods. We were beaten, hands down. I believe that every man on that committee knew in his heart that we had a just case. I would like to know where the trouble was. We are coming back every year until we get our just dues. The thing is to find out where our weak point is and how to overcome it.

THE PRESIDENT: This discussion has arisen very naturally in connection with the report of the Committee on Legislation. We have a special committee on markets, transportation and grievances, which is scheduled to bring its report in a little later, when this whole subject will be open for our inspection and discussion.

On being put to the meeting, the reports of the Committee on Publicity and Committee on Legislation were respectively and unanimously adopted.

THE PRESIDENT: We are now to have short papers on the cost of producing some different kinds of farm products. The first of the papers is by J. Frank Dimon, secretary of the Long Island Cauliflower Association, Riverhead, one of the few such associations in the entire country that is rendering a highly valuable service to its members.

COST OF PRODUCING CAULIFLOWER

J. FRANK DIMON

I will speak for a short time on the cost of production, and then for a few moments on our way of marketing our produce through the Long Island Cauliflower Association, in which I have a deep interest.

I can give you the figures on the cost of producing cauliflower, which, as you know, is a very delicate vegetable, but I believe that if properly advertised, it could be placed in the hands of the people of our great cities. It should be given the credit of being the finest vegetable grown on the farm. It is well known that only a small portion of our country can successfully produce cauliflower. Long Island, a little spot somewhere down below here, which is hardly on the map, and which is very small even when you get there, produces cauliflower successfully over a strip of country only some thirty miles in length and one to five miles in breadth.

The figures which I will give you in regard to the production of cauliflower are not my own, but, representing, as they do, the average cost in a series of some ten or fifteen years, they will be very nearly correct. Of course, in growing cauliflower the cost of production varies greatly. It costs no more to raise a crop of cauliflower, where the proceeds from one acre are two hundred dollars, than it would to grow a crop at a loss of from twenty-five to fifty dollars an acre. From the figures here, the total cost per acre is one hundred and fourteen dollars. That may seem a trifle large, but from our experience we find that it is about correct. I will divide that up into five or six different heads, so that you will see I am very nearly correct. First, we consider the rent of the land as $15; second, fertilizer, $40; barrels, $26; seed, $3; paris green, $2; barnyard manure, $5; labor, $23; total, $114. It may seem rather startling for the average cauliflower grower to realize that he has to sell from that acre cauliflower approximating one hundred and twenty-five dollars before he receives very much for himself. I do not know that I can say anything more along the line of cost of production. There are the figures, which speak plainly for themselves.

I will speak for just a moment or two on our Long Island Cauliflower Association, merely to show you our way of marketing the crops, for the manner in which the crop is taken care of or where it is distributed is certainly more important to the Long Island farmer than the growing.

The Long Island Cauliflower Association was organized in 1901 for the purpose of handling the Long Island cauliflower. In 1903 it was incorporated, with a capital stock of ten thousand dollars, of which there are issued one thousand two hundred and eleven shares of five dollars each.

Our great market is New York City, but, owing to the increased acreage, the association has been compelled to find new markets, so that the grower of to-day has not only the great city at his doors, but, by the use of refrigerator cars, the Long Island cauliflower is sold in the markets of Philadelphia, Baltimore, Washington, Pittsburgh, Cleveland, Cincinnati, Louisville, New Orleans, St. Louis, Chicago, St. Paul, Kansas City and Montreal.

The Long Island Cauliflower Association receives the cauliflower at the loading stations from the growers, and, with special trains, delivers it to the commission house designated by the shipper, collecting freight from the commission house, which makes returns direct to the shipper. At the end of the shipping season the association pays all claims for packages lost in transportation. The association buys from the grower for the representatives of the commission houses of the Western cities.

It imports seed for its members, with a material saving to them. The price of seed at one time was from two to three dollars per ounce; to-day the association price is one dollar. It may be of interest to know that the seed used by the Long Island grower comes from Denmark. The association also buys empty barrels and stores large numbers in its warehouse. Last year the association bought one hundred and forty thousand barrels for its members. It also recommends to its shippers reliable commission houses. The association is managed without additional cost to its shippers, as it is able to ship in carload lots, whereas the individual shipper is compelled to make small shipments.

The crop of 1903 was one hundred and thirty thousand barrels, of which nineteen thousand were shipped to outside markets. In 1911 the association delivered two hundred and forty-five thousand, of which sixty-five thousand were shipped to outside markets. The independent buyers, shipping about twenty thousand, also shipped to Western markets. The grower still receives a reasonable price for his product.

The benefits of the association are, then, that it prevents gluts by enlarging its markets, saving on the price of seed, saving on the price of barrels, paying for all packages lost in transportation, arranging for and managing special trains, recommending reliable receivers, and advertising to increase consumption. Moreover, it is operated without additional cost to the shipper.

I think that point of advertising for increased consumption has been spoken of in this meeting along other lines. That is one work that we, as an association, are trying to do. There is no question but that, if the cauliflower of Long Island were advertised properly, there would be ten barrels consumed where there is one to-day. In fact, very few of the people of this great country realize the value of cauliflower as a vegetable. Most people, I think, use the cauliflower as it comes from the " fifty-seven varieties."

VICE-PRESIDENT DILLON (presiding): Discussion on these short papers will be allowed after they have all been presented. I will now ask for the next paper, by W. Y. Velie, of Marlboro.

COST OF PRODUCING AND MARKETING ASPARAGUS

W. Y. VELIE

I assume that almost everyone in this audience is more or less familiar with the vicissitudes of fortune attending the making of a living or of enlarging a bank account when dependent upon producing these results from the soil. If your soil is adapted to the crops you are growing, if the weather conditions are favorable, if you prepare your soil and cultivate it in the best manner, if you grade and pack your products, whether fruits or vegetables, in the most thorough and careful way, if you market these goods through the medium of an honest commission house and do not strike an overloaded market, the profit will compare favorably with a like investment in many other lines of business. It is impossible to calculate at the beginning of a season what your net money results will be, owing to the many contingencies which may arise between seedtime and harvest.

It, therefore, is good judgment to grow crops that are reasonably sure to show a profit every year, rather than those that might show a larger but a more uncertain one. Of the many crops I have grown I consider asparagus the most dependable for a period of years, providing your soil is suitable to its growth. Adverse weather conditions will not seriously affect its growth, as a rule. A late frost will merely retard it a little and in extreme cases will only destroy the day's cutting on which it occurs. With your soil properly prepared it will withstand a protracted period of dry weather, which is seldom serious so early in the season. In the case of a frost at the blossoming time of any fruit, you may lose your whole year's labor, and we all know how disastrous the lack of moisture is to a promising crop of strawberries or any other shallow-rooted plant. Its long season of gathering is also in its favor, as from six to eight weeks is considered the proper length of the cutting period, and during that time your chances are much better than when you are compelled to harvest and sell your crop in the space of a few days, as in the case of the strawberry and some other fruits and vegetables.

The asparagus plant has not many insect enemies that cause the grower anxiety, although in some localities the asparagus beetle will damage the young shoots and defoliate the mature plant, thus weakening it for the coming season. The only fungus disease that affects it is the asparagus rust, which does considerable damage to the older varieties, such as Conover's Colossal, and Barr's Mammoth. If you grow the newer varieties, such as the French Argenteuil and Palmetto, which so far are resistant to it, you will have but little trouble in this line. We have never had to take means to combat either of these troubles.

The cost of growing and marketing asparagus depends, as with any other crop, upon the local conditions, viz., upon the supply and demand for labor, the distance of your farm from a shipping point and whether it is in close proximity to a city. If within a short distance of a city, your labor cost will be more, but in that case you can market your product without the cost of transportation and commission house charges. Another important advantage of being near a city is that your source of fertility in the shape of stable manure is near at hand, thus saving the transportation charges on that.

In this paper I have based my figures upon the local conditions we have to deal with at our own farm, both in the cost of production and selling. Our farm is located seven miles from the city of Newburg, about one-half mile from the West Shore Railroad station, from which point we ship our produce and receive our stable manure. Our labor conditions are quite favorable, and we market most of our crop in Boston and New York City. The market has averaged the highest for the past ten years in Boston and the net returns have been more, even after deducting the higher express charges, which are excessive. Right here I want to say that only a small percentage of the land in this locality is adapted to the growing of this crop, as it needs a sandy loam and most of the soil here is full of small stones. I speak of this for the reason that if enough could be grown so that the amount was large enough to ship in carload lots, our transportation charges would be much less. As it is, we are at the mercy of the express company, whose rates are very high.

In arriving at the cost of any crop, it is quite necessary to take into consideration the number of years needed to grow it to profit-bearing age, and the number of years it will remain in that condition. From my experience, I consider twelve years to be the average length of time that asparagus will profitably occupy the land, although this will vary somewhat with the soil in which it is grown, method of culture and the variety planted. Two years of growth are required before any can be cut for market, but the cost of plants and labor up to this time is paid for by growing between the rows of young plants other crops, such as potatoes the first year, and cabbage, carrots or beets the second year, provided good, clean cultivation is practiced. Some growers, however, think it best not to grow anything at all between the rows, but devote all their efforts to the production of a strong-bearing plant at the three-year-old age. This leaves us ten years on which we can count the cost and profit. The third year from planting, which will be the first cutting year, will not yield much profit, but maximum yields should be received for the next six years. After that it deteriorates, both in yield and quality, until the field ceases to produce a profitable amount of asparagus. It is a mistaken idea that an asparagus plantation will last almost a lifetime. This erroneous notion no doubt comes from the long-lived asparagus beds in family gardens, where, as a rule, the quality of the product is not taken into consideration, as long as the family is supplied. But in growing an article for discriminating markets we must have the best all of the time; therefore, an asparagus field ceases to be a profitable investment after a period of about twelve years. An asparagus field, if planted with the new varieties and properly grown, will produce per acre, for a period of ten years, one hundred dozens of number 1 grade and fifteen dozens of number 2 grade.

I will now submit a statement of the cost of producing and marketing an acre of asparagus per year, covering a period of ten years; also receipts for the same. Results on other farms will vary in proportion to their location.

COST

Labor, including plowing, cultivating and ridging	$25 00
Manure, both stable and commercial	40 00
Cutting or gathering	15 00
Bunching or tying	15 00
Commission, 10 per cent	37 50
Express charges	27 50
Packages	9 00
Rafia for tying	3 00
Overhead charges, including interest on land, taxes, upkeep, deterioration of utensils	25 00
Total	$197 00

SALES

100 dozen, Grade 1 at $3.50 per dozen	$350 00
15 dozen, Grade 2 at $2.00 per dozen	30 00
Total	$380 00

From these figures you see that there is a net profit per acre of $183, or an average of about 14 cents per bunch. The best information I can obtain shows that the consumer pays 45 cents a bunch for grade 1 and 25 cents for grade 2, or an average of about 40 cents a bunch, for which the producer receives 14 cents.

I am not prepared to say how much of the difference would be considered a fair profit for the middlemen, but on the face of it it looks as if the producer were not receiving his share. A custom in the ultimate disposal of our products, which results unfavorably to us, is the maintaining of exorbitant prices by the retailers, even when the wholesale markets are overloaded and consequent low prices ruling; while if they would lower their prices, a greater demand would be created, thereby causing a quick recovery of the wholesale market and a speedy return to paying prices.

I am in sympathy with the prevailing thought of this meeting, and with a full discussion of the subject I am sure some means will be devised which will lead to closer business relations between the producer and the consumer.

THE VICE-PRESIDENT: We will now have the next paper, by Mr. Timothy Costello, of Penn Yan.

COST OF PRODUCING APPLES

TIMOTHY COSTELLO

Fruit growing has come to be recognized as one of the most profitable industries connected with agriculture. The first requisite for success is a love for the business and enthusiasm sustained throughout the whole year. We are apple growers and are intensely interested in our work. We are not scientific men; we are solving no problems, but are trying as best we can to apply the knowledge obtained through our experiment station at Geneva, our agricultural college at Ithaca, and the fine men going out over the country trying to help the farmer improve his condition, and whatever measure of success we have achieved is through the thorough application of the knowledge thus obtained. We are getting results and I believe the map of the fruit belt of New York State will have to be enlarged to embrace Yates County, as I believe it has been thoroughly demonstrated that we can produce as good fruit, not only as any county in New York State, but as good as any county in the United States.

There are four things absolutely necessary to a successful apple grower, namely, pruning, spraying, cultivating and fertilizing.

On the thoroughness with which this work is done will depend the degree of success of the operator.

Our orchard consists of fifty acres of Baldwins and Greenings, and was planted at three different periods. The trees range in age from twenty-eight to thirty-eight years. Although I purchased this property in 1904, I did not take the personal management until late in the season of 1908. During 1908 the orchard was badly infested with blister mite, which seriously affected the formation of fruit buds and cut our crop short in 1909. In the spring of 1909 we sprayed thoroughly with lime-sulphur, at a strength of one to nine, going over the orchard twice while the trees were dormant, with the result that the foliage remained perfectly healthy through the whole season. We have continued to spray each season: Once while the trees are dormant, using the lime-sulphur at winter strength; next, just as the petals fall from the blossoms; and, third, just after the fruit is formed. For the last two, or summer sprayings, we use the lime-sulphur, at a strength of one to forty, with five pounds of arsenate of lead added to each hundred gallons of solution. We prune each year, after which all brush is picked up and burned at once. We start the plows as soon as the brush is cleared away, plowing just as shallow as we can to be consistent with good work. As soon as the ground is plowed, we start the harrows and continue up to about the middle of July, when we stop cultivating and let the weeds grow, which has been all the cover crop we have used thus far. We fertilize with stable manure, drawing all we can get from the village.

In making up my expense account, I have charged for my own services, which I estimate at one thousand five hundred dollars per year, the use of the home in which I live, and interest on the capital invested, which is twenty-one thousand, or one thousand two hundred and sixty dollars per year. My expense account for the past three years, when I have had personal charge of the orchard, is as follows:

	1909	1910	1911	Average
Average cost per acre up to harvesting..	$81 77	$84 81	$86 05	$84 21
Average cost of harvesting per acre, including barrels	21 62	48 11	51 62	40 45
Average gross income per acre..........	113 00	274 64	263 95	217 19
Average net income per acre............	9 61	141 72	126 28	92 53

It will be seen that the care of the orchard up to harvesting time is practically a fixed charge, while the cost of the harvesting will be influenced by the size of the crop, and the income will be influenced by the size and quality of the crop and the price received.

THE PRESIDENT: The next paper announced on our program is by B. J. Case, of Sodus, former president of the New York State Fruit Growers' Society, and one of our most successful fruit growers. Owing to the unavoidable absence of Mr. Case, he cannot personally present his paper.

On motion, it was voted to include this paper in the proceedings.

COST OF PRODUCING APPLES

B. J. CASE

My farm is composed of 150 acres: 25 acres of apples of the following ages, 6 acres set in the fall of 1852, 6 acres set in the spring of 1853, 4 acres set in about 1870, 3 acres set in 1881, 6 acres set in 1882; 21 acres of grapes, set in 1888 and 1889; 5 acres of plums, set in the spring of 1888; 10 acres of pears, set in the spring of 1894; 20 acres of peaches, set in 1894, 1895 and 1896; 4 acres of cherries, set at different times, commencing in about 1890 and some as late as 1903; 15 acres of young apple trees, set in the spring of 1908 and 1909; 10 acres of pears, set in the spring of 1907 and 1909. All of this young fruit has been taken care of in the expense account of the variety to which they belong, and from which there has been no fruit so far that would amount to anything.

The balance of the farm is composed of 15 acres of wood, 15 acres of pasture, and about 10 acres is used up in the roads about the buildings and the driveways.

You will notice, by adding the total profit on the different fruits, for the six years, that it shows a total net profit of about $40,000. This includes what we call an overhead charge for each year of $3,000, making in all $18,000, but does not include any salary for myself. By charging a salary for my own services of $1,800 a year for six years, making $10,800, it would leave about $30,000 net profit for the six years, or an income of ten per cent. per year on a valuation of $50,000, which is no bonanza, but shows that it is a good, profitable business when managed properly and under the care of an experienced man.

YEAR	RECEIPTS	EXPENSES	PROFIT
Apples			
1906	$4680 03	$2506 24	$2173 79
1907	5536 24	2406 89	3129 35
1908	6287 02	3290 44	2996 58
1909	4950 56	2721 94	2228 62
1910	6416 99	2872 11	3544 88
1911	8971 34	4299 33	4672 01
Profit for six years			$18,745 23
Average profit for one year			$3124 20
Average profit per acre			124 16
Peaches			
1906	$1995 83	$1823 58	$172 25
1907		1171 77	Loss 1171 77
1908	3646 27	2036 32	1609 95
1909	3326 87	2652 78	674 09
1910	3270 43	1894 71	1375 72
1911	5964 54	3134 22	2830 32
Profit for six years			$5490 56
Average profit for one year			$915 09
Average profit per acre			45 75
Pears			
1906	$2414 94	$1013 98	$1400 96
1907	2718 37	1307 71	1410 66
1908	1683 37	952 62	730 75
1909	2468 61	1400 75	1067 86
1910	1517 82	1074 17	443 65
1911	1808 55	1137 93	670 62
Profit for six years			$5724 50
Average profit for one year			$954 08
Average profit per acre			95 40

YEAR	RECEIPTS	EXPENSES	PROFIT
Plums			
1906	$633 74	$504 47	$129 27
1907	1265 27	643 38	621 89
1908	659 76	681 12	Loss 21 36
1909	836 49	653 59	182 90
1910	417 97	317 05	100 92
1911	915 64	637 45	278 19
Profit for six years			$1291 82
Average profit for one year			$215 30
Average profit per acre			43 06
Grapes			
1906	$3924 21	$3148 23	$775 98
1907	4690 36	2890 04	1800 32
1908	3301 99	2754 99	547 00
1909	2833 04	2432 91	400 13
1910	3658 26	2225 95	1432 31
1911	2656 95	2597 34	59 61
Profit for six years			$5015 35
Average profit for one year			$835 89
Average profit per acre			39 80
Cherries			
1906	$1151 93	$501 53	$650 40
1907	784 58	612 46	172 12
1908	1381 25	738 96	642 29
1909	1110 97	693 81	417 16
1910	1658 08	780 77	877 31
1911	2374 93	968 90	1406 03
Profit for six years			$4165 31
Average profit for one year			$694 22
Average profit per acre			173 55

EXPENSES, 1911

Pears

Jan. 30	Labor	$32 14	Oct. 30	Labor	$66 98
Feb. 28	Labor	9 09	Nov. 8	Picking, by bushel.	26 00
Mar. 31	Labor	48	Nov. 30	Labor	25 80
Apr. 30	Labor	96 18	Dec. 4	Trees	2 00
May 20	Fertilizer	90 00	Dec. 4	Caps and circles...	2 10
May 30	Labor	130 81	Dec. 30	Labor	25 68
June 30	Labor	56 96	Dec. 30	Spraying material.	62 72
July 31	Labor	29 79			
Aug. 31	Labor	77 66		Total	$784 99
Sept. 30	Labor	50 60			

EXPENSES, 1911 (*continued*)

Grapes

Jan. 30	Labor	$20 98
Feb. 28	Labor	12 60
Mar. 31	Labor	1 92
Apr. 30	Labor	102 86
May 20	Fertilizer	189 00
May 31	Labor	140 50
June 30	Labor	116 72
June 30	Bags	151 00
June 30	Slats for trays	7 50
July 31	Labor, sacking grapes	87 50
July 31	Labor	83 84
Aug. 31	Labor	109 96
Sept. 30	Labor	82 93
Sept. 30	Baskets	106 00
Oct. 30	Labor	126 47
Nov. 2	Case & Co., packing grapes	334 81
Nov. 7	Case & Co., packing grapes	71 58
Nov. 7	Grapes spoiled	1 86
Nov. 30	Labor	44 30
Dec. 4	360 4-inch tiles	9 36
Dec. 4	Case & Co., packing grapes	3 25
Dec. 4	Grapevines	6 00
Dec. 30	Labor	27 00
	Total	$1837 94

Peaches

Jan. 30	Labor	$2 56
Feb. 28	Labor	13 80
Mar. 31	Labor	117 37
Apr. 30	Labor	99 90
May 20	Fertilizer	164 00
May 31	Labor	93 08
June 30	Slats for crates	25 56
June 30	Labor	132 53
July 31	Clover seed	13 68
July 31	Labor	38 19
Aug. 31	Labor	119 50
Sept. 30	Netting	162 50
Sept. 30	Labels	11 25
Sept. 30	Crates made up	87 70
Sept. 30	Material for crates	16 00
Sept. 30	Jersey baskets and cushions	35 72

Peaches (*continued*)

Sept. 30	Baskets	$270 00
Sept. 30	Labor	531 76
Oct. 30	Labor	1 60
Nov. 2	Material for crates	350 00
Nov. 30	Labor	62 92
Dec. 4	2914 3-inch tiles	52 45
Dec. 30	Labor	64
Dec. 30	Spraying material	24 64
	Total	$2427 35

Apples

Jan. 10	Picking bags	$26 75
Jan. 30	Labor	4 74
Feb. 28	Labor	3 18
Mar. 31	Labor	55 67
Apr. 30	Labor	127 74
May 20	Fertilizer	225 00
May 31	2200 3-inch tiles	39 60
May 31	Labor	198 91
June 28	Clover seed and bags	99 84
June 30	Labor	141 88
July 31	Clover seed	13 69
July 31	Labor	188 49
Aug. 18	Picking up chops	16 30
Aug. 31	Labor	97 32
Sept. 30	Labor	203 94
Oct. 30	Labor	460 13
Nov. 1	Apples bought	550 00
Nov. 8	Picking	573 48
Nov. 30	Labor	93 58
Dec. 4	Caps and circles	33 45
Dec. 4	Trees	91 01
Dec. 30	Labor	2 04
Dec. 30	Spraying material	170 24
	Total	$3416 98

Plums

Feb. 28	Labor	$6 24
Mar. 31	Labor	1 44
Apr. 30	Labor	23 48
May 20	Fertilizer	27 00
May 31	Labor	43 38
June 30	Labor	43 64
July 20	1200 baskets	27 60
July 31	Labor	1 97

EXPENSES, 1911 (*continued*)

Plums (continued)

Aug. 31	Labor	$100 28
Sept. 30	Labor	57 44
Sept. 30	4000 baskets	98 00
Oct. 30	Labor	10
Nov. 30	Labor	8 00
Dec. 30	Labor	15 36
Dec. 30	Spraying material	7 04
	Total	$460 97

Cherries

Jan. 30	Labor	$ 96
Feb. 28	Labor	12 64
Mar. 31	Labor	24 26
Apr. 30	Labor	15 80
May 30	Labor	3 53
May 30	Fertilizer	36 00
June 30	Labor	$82 69
July 5	6000 baskets	138 00
July 31	Picking	284 80
July 31	Case & Co., commission not taken out of sales	51 64
July 31	Labor	131 93
Aug. 31	Labor	3 68
Sept. 30	Loss on cherries	1 50
Nov. 30	Labor	17 72
Dec. 4	225 4-inch tiles	5 85
Dec. 30	Spraying material	11 36
	Total	$822 36

EXPENSES

Apples

Labor on time cards	$1577 62
Picking, paid by the bushel	573 48
Apples bought	550 00
Spraying material	170 24
Clover seed	113 53
Trees	91 01
Fertilizer	225 00
Tile	39 60
Caps and circles	33 45
Picking bags	26 75
Picking up chops	16 30
	$3416 98
Overhead charge	882 35
Total	$4299 33

Peaches

Labor on time cards	$1213 85
Crate material	391 56
Baskets	305 72
Netting	162 50
Fertilizer	164 00
Crates made up	87 70
Tile	52 45
Spray material	$24 64
Clover seed	13 68
Labels	11 25
	$2427 35
Overhead charge	706 87
Total	3134 22

Plums

Labor on time cards	$301 33
Baskets	125 60
Fertilizer	27 00
Spraying material	7 04
	$460 97
Overhead charge	176 48
Total	$637 45

Grapes

Labor on time cards	$870 08
Case & Co., packing	409 64
Fertilizer	189 00
Bags	151 00

EXPENSES (*continued*)

Grapes (*continued*)

Baskets not taken out on vouchers	$106 00
Sacking	87 50
Tile	9 36
Slats for trays	7 50
Grapevines	6 00
Grapes spoiled in shipment	1 86
	$1837 94
Overhead charge	759 40
Total	$2597 34

Cherries

Labor on time cards	$293 21
Picking	284 80
Baskets	138 00
Case & Co., commission not taken out	51 64
Fertilizer	36 00
Spraying material	11 36

Cherries (*continued*)

Tile	$5 85
Shrinkage in weight	1 50
	$822 36
Overhead charge	146 54
Total	$968 90

Pears

Labor on time cards	$602 17
Fertilizer	90 00
Spraying material	62 72
Picking	26 00
Caps and circles	2 10
Trees	2 00
	$784 99
Overhead charge	352 94
Total	$1137 93

THE PRESIDENT: We will now hear a paper on the public market, a means used to reduce the cost of living, which is found in some cities, notably in Albany. Mr. E. J. Marsden, a prominent member of the Albany County Grange, is the speaker.

THE ALBANY PUBLIC MARKET

EDWARD J. MARSDEN

The historian Kuhn said: "In 1749 the street that goes between the two churches is five times broader than the others and serves as a market place." In 1791 the municipality built a market house on Broadway, north of State Street, at an expense of two hundred and twenty-two pounds sterling. This was a great gathering place for the inhabitants of the neighborhood when the butchers had departed. Afterwards, for years, State Street served as the market place, until it was removed to what is known as Steamboat Square. After two or three years it was moved to its present location, which is the square bounded on the north by Beaver Street, on the east by Grand Street, on the south by Hudson Avenue, on the west by Wendell Street, and is now known as Center Market.

It is operated under an ordinance of the common council, which provides that under the market committee and an inspector of markets, who shall have exclusive charge and control and general management thereof, no person other than farmers and market gardeners, selling meats, poultry, butter, vegetables and other commodities raised, grown or made upon farms owned or leased by the person selling the same, and having a permit, shall use any portion of this market without paying therefor.

The city engineer has mapped and divided the market into two sections, about one-third of which is divided into spaces or stands, ten by twenty feet, which are rented to dealers for from one hundred to three hundred dollars per annum, according to the location. For the first time, the rentals for the past year have made the market self-sustaining. The other two-thirds of the space is free to any person holding a permit, which is issued by the mayor and countersigned by the inspector of markets. This is to prevent fraud, by people buying at the wholesale and commission stores and re-selling in the market. The market place is asphalted and laid out in street form, requiring a systematic way of driving and placing of wagons the most convenient to all. It is closed each day, after which it is thoroughly cleaned.

Operation. At certain seasons the early producers arrive at midnight, and from that hour a constant stream comes pouring in, until at times the adjacent streets are filled for blocks in all directions, and there have been single days when over four hundred teams have been there. The earliest buyers are the wholesale dealers, who supply the summer resort trade and hotels to the north; they ship by earliest express from two to four big truck loads every morning. This is followed by the retail merchants, grocers, butchers, etc., who buy early to supply their store needs, all to be re-sold. Then come the hucksters, who load their wagons and supply a regular trade by peddling, after which come the housewife and individual purchasers or consumers for their daily supplies which are sold from the wagons in any quantity desired. There are times when three or four counties are represented on the market by producers. It is estimated that there are between four and five thousand individual farmers on this market during a year.

Value to Producers. It provides a permanent place of sale, where the consumers are trained and by force of habit go to buy.

The competition is practically between the producers themselves. It gives the producer two options, whether he will sell his products at wholesale or retail. Producers establish a trade with regular customers who order ahead and buy regularly from them. Producers having regular customers, who do not take the entire production, find here a market for any surplus.

Value to Consumers. It insures the freshest and best quality of produce obtainable, a fact recognized by the retail merchants. The prices average enough lower than the store prices to make a profitable saving to the consumer.

Conclusion. A city providing a market place benefits its citizens by making, through competition, a lower price, thereby reducing the cost of living. Its merchants are benefited by the goods sold to those using the market in purchasing their needed supplies.

MR. RUSSELL: Mr. Marsden, in speaking of the earliness of the hour, hit upon the great evil of public markets, and also the great reason why the ultimate consumer does not benefit more by it. The average housewife does not like to get up at three or four o'clock in the morning in order to get produce direct from the producer. Any system which would overcome this would make the public market of much greater benefit.

MR. PAGE: Years ago we did not look for results in an orchard under about twenty or twenty-five years. By the present methods we do not have to wait so long. This year I harvested from my orchard of four acres, set just twelve years, from two to four barrels of apples per tree. Last year I picked two barrels from some trees. This orchard has been worked every year, and by proper care and spraying, we get results in a short time, which makes it profitable. A buyer from Minneapolis who came into my orchard before we had picked any of the apples this year said to me: "That is a sight which compares with the Colorado fruit, and those Western fruits. They grow just that way. Their trees are about the same size." Every apple was perfect. It showed that by proper care we do not have to wait twenty-five or thirty years to get fruit.

THE PRESIDENT: How soon do you consider that an apple orchard comes into profit?

MR. PAGE: This orchard has come into a good profit in twelve years from the setting. That is the Ontario kind. We spray thoroughly, for there is no use in trying to raise fruit nowadays unless we spray.

THE PRESIDENT: Was a profit derived from other crops during that twelve-year period?

MR. PAGE: Yes, we raised cabbage and corn between the rows, corn when the trees were young and later, cabbage. This year I sowed Canada peas for hogs.

PROF. FRASER: What does the grower of cauliflower receive? What is consumed by the transportation companies, and what does the consumer pay?

MR. DIMON: Transportation charges on a barrel of cauliflower on Long Island are twenty cents a barrel for freight and fifteen cents for cartage. It costs ten per cent. to the commission house for the sale. From our figures, the average acre of cauliflower in the last few years has yielded about two hundred dollars, that is, gross, with eighty-one dollars profit. Sometimes in our marketing that profit is very much less. So that I do not want to advise the farmers of the state of New York to raise cauliflower. We can do it for our market on Long Island and at the prices we receive we can raise it at a profit. What the consumer pays for the cauliflower is very hard to tell.

A VOICE: How many heads to a barrel?

MR. DIMON: From fifteen to twenty-five. In some other parts of the island it is slightly more, twenty-five to fifty. They are sold in the market, wholesale, anywhere from twenty-five cents to two dollars a barrel, long cut, and two to five or six dollars a barrel, short cut, referring by "cut" to the leaves.

MR. WARD: I supposed we could grow cauliflower in western New York, but Mr. Dimon tells us there is only a territory about five miles wide and thirty miles long where it can be grown to advantage. If Mr. Dimon can tell us the kind of soil adapted for it, and the class of fertilizers he found best, I would be glad to hear it.

MR. DIMON: We find a sandy loam soil best adapted to it, and it must be well drained. The reason it is impossible to raise cauliflower on the south side of the island is because of the fog which, rising from the ocean, sweeps over the land nearly every day. The land on the east end is very heavy, and in a wet season cauliflower simply wilts away. It requires a certain amount of moisture, but the land must be well drained.

A large number of the farmers mix their own fertilizer, but it is largely a question of chance. From one to one and a half tons, probably from two thousand five hundred pounds to two thousand eight hundred pounds to the acre, is about the average.

Mr. Tuttle: We can raise cauliflower successfully on the south side of Long Island, but cannot get it to market at the price our north side friends can. The trouble is that we do not raise enough of it to have the so-called "cauliflower train," and are forced to send it by express. From my station at Eastport the express is sixty cents a barrel. I cannot send it by freight because it would take too long. While a great deal of it is raised successfully on Long Island, there are a great many failures. There is clubroot, stem rot, and lice by the hundreds of millions, and worms, and there is labor forever and ever. It will rot down in the barrel from the time it is shipped on Long Island until it arrives in New York, under certain conditions, and it must be cut exactly when it is ripe or it is gone. It is a very delicate, difficult crop to raise.

There is, however, a point I wish to mention here which ought to have a remedy somewhere. One of the biggest growers on the north side of Long Island told me that he sold his cauliflower, which was very excellent in quality, as low as seventy-five cents a barrel and as high as eleven dollars a barrel. That cauliflower ought never to be sold at seventy-five cents a barrel. Eleven dollars a barrel is an exorbitant price. The trouble lies in our distribution. At times there is so much cauliflower that it rots in the market and is dumped out to sea. Then there are times when it is so scarce that those of unlimited wealth are willing to pay eleven dollars a barrel, and probably at the rate of fifty or sixty cents a head. If we had the right distribution, that cauliflower would never sell at seventy-five cents a barrel, and probably never as high as eleven dollars a barrel.

Upon being asked for an expression of opinion on the subject of the public market, the society showed that it considered it a desirable institution.

MR. NOTT: My market is Kingston. They have no public market there and the farmers spoil their own markets. They do not know when they come to the market what the prices are, and they sell haphazard. I met a man selling butter at eighteen cents a pound and another selling at twenty-eight cents a pound. To prevent this, a public market is a great blessing.

MR. TUTTLE: A public market is one of the most desirable things that can exist in a community where it can answer the purpose. I should doubt very much if a city exceeding one hundred thousand in population could have a public market which would be in any true sense a public market or a producers' and consumers' market. There is the question of the farmer losing his time in getting to that market, the multiplicity of teams and wagons which congregate in the market place, and the proclivity of shopping from one market to another, which is inherent in human nature, especially among women.

There ought, it seems to me, to be an intermediary between producer and consumer, but that intermediary should be controlled by both producer and consumer. He should have no interest except to do his duty as an intermediary, and see that the prices are established so that the producer gets a fair return for his product and the consumer buys at as low a price as is consistent with the expense of transacting the business and a fair return to the producer. That would do away with the objection that the farmers are not really business men. They do not know the condition of the market or quotations. They may come to the market and charge too much or may be in a hurry and sell for a ruinous price. It is a demoralizing way of conducting business. If they could send their stuff to the market where it would be handled by a man jointly in their own employ and in that of the consumer, it would partly solve this marketing question. It is not right that the producer should set the price on food; neither is it right that the consumer should do so, but it is right that they jointly should set the price on food. They should both be represented in the market business.

In large cities, like New York, it would be impossible for a public market to do anything. The area of production is too far removed, for one thing, and the area of the consuming population is too widespread. They would have to have markets distributed all over the city in different localities. A market conducted by producers and consumers, eliminating this middleman, is a desideratum greater than any other for both farmers and consumers.

PROF. FRASER: Why should the farmer not set the price on his products?

MR. GEROW: Because he is not well posted.

MR. VAN BUREN: How does the commission man set the price?

PROF. FRASER: I stood five years in Manchester, England, taking stuff in and selling it for others. I would find out and pay the prices, put the stuff on the market and take all that the trade would bring.

MR. SCHRIVER: A farmer ought to know what his products cost, and what would be a living profit to him.

THE PRESIDENT: We will invite Mr. Gilbert McClurg, secretary of the Land Show, to speak. Mr. McClurg came into New York to try a new idea. Although land shows have been held in the West for a number of years, we in New York first looked with some astonishment upon the idea. We are, however, coming into our own, and our second consideration of the subject led us to think that after all it might afford us an opportunity to show what we could do.

MR. MCCLURG: The first publicity man along agricultural lines from New York was an Indian chief. When Hendrick Hudson sailed up this Hudson River, dressed in scarlet and gold, he was hailed by the Indians, on either bank and here at this site of Albany, as the Manitou descending, and was regaled by them with pumpkins, grapes and roast dog, served in a wooden bowl, painted red. My grandfather grew quinces, pumpkins, grapes and apples at Westfield, in Chautauqua County, and I have come back to New York after exploring the West. As your state papers have said, many wise men from the West have come to the East as a result of the land shows and New York State's representation therein.

From my office on the twenty-sixth floor of the Singer Building, New York, I have seen great steamers bringing families of emigrants to the port of New York City, and four hundred and forty thousand of those emigrants, among the millions annually arriving there, are actually peasant farmers from Europe. The Census Department of Washington has recently reported, and for some years past continued to report, that hundreds of thousands of these emigrants, after earning a modest competency in our country, have taken their earnings to Europe and invested them and cultivated European soil, because they did not know the wondrous agricultural and horticultural opportunities of our country. The fact that these emigrants come to New York, many of them residing in the congested districts of the metropolis, where they do not build homes for the betterment of the republic and their families, suggested to me that the greatest city of this new world, the metropolis of finance, of emigration, of traffic, of publicity, should hold a great land show. It was not the idea of the originators of this exhibition that it should exploit or secure publicity for the West alone. Alaska, it is true, was one of the prominent exhibitors therein; Massachusetts and Vermont made exhibits of maple sugar, fruits and vegetables; Colorado, her sugar beets; Montana, her grains; and Florida, her pecans, grape fruit and palms.

Commissioner Pearson, wide awake to any opportunity to give publicity to the agricultural interests of the state, and Mr. Sessions, chairman of your Publicity Committee, recognizing that New York should make a fine demonstration at the American Land and Irrigation Exposition in New York, secured the choicest space in the exposition for New York State, and the two hundred and thirteen thousand visitors, who came there during the eight days it was open, saw what New York State farms, orchards and dairies produced.

I have, during the last thirty days, appeared before a committee of men in New York, who authorized me to start a commercial apple orchard in this Eastern section. I called on commission men in New York to tell me how they fixed the price of apples, and they showed me how the apples were brought into a great arena and sold to the highest bidder. The bidder makes the price in New York City. I was told that New York State apple growers do not pack their apples in boxes as well as the Western apple growers, and, accordingly, the Western apple growers receive more for their fruit. When I asked what was the "best apple," I thought they would say that the Colorado Jonathan was as good a tasting apple as any, but I was told not, and not the Albemarle Pippin, which England pays the highest price for, but the best apple in the world, they said, is the Northern Spy of the state of

New York, because it is a good eating, shipping and preserving apple, and keeps a long, long time.

At the exposition we offered a thousand-dollar trophy for the best hops grown, and that prize went to New York State. I recently received a letter from a Pacific Coast state, saying they did not know that their hops were to be put into competition at the exposition with the New York State hops and that the Pacific Coast hops never should be compared with the superior New York hops. I regret to say that New York State did not win the apple prize at our exposition; it went to the state of Washington. The prize apples were raised by a woman. She exhibited twenty-five boxes of apples which Professor Van Deman, of Washington, the accepted judge of all the apple shows of our country, said were the best, and she received the five hundred dollars in gold, given for the best apples. I trust that next year New York will win the thousand-dollar prize which we shall offer for the best twenty-five boxes of apples, and quality will be considered.

We shall hold our second annual exposition in New York from November 15 to December 2, 1912. The first thousand-dollar prize it offers for the best sugar beets is given by Louis Havemeyer, one of our advisory board. We also offer a thousand-dollar prize for the best potatoes; also for the best barley; for the best cotton, corn, etc. Altogether, our prizes will be the most valuable in the history of American agriculture. At such an exposition New York farmers may teach other farmers, as well as learn agricultural lessons from farmers of other states. Professors of the Cornell Agricultural College and your Commissioner have said that our exposition last year held the finest assemblage of products of American soil ever seen in our America. The next exposition will be held in the Seventy-first Regiment Armory, which has a larger auditorium than Madison Square Garden, and will contain exhibits from both North and South America.

We learned an important lesson in potato growing at the last exposition. Nine hundred bushels of potatoes per acre, all potatoes smooth and without protuberances, and uniform in size, grown in Minnesota, and also in British Columbia last year, were exhibited at our exposition. The prize exhibit, containing one hundred varieties, one-half bushel of each being shown, came from Aroostook County, Maine.

We hope that you will send an exhibit from New York State to the New York City Land Show next November. For its proper exhibition Commissioner Pearson has already reserved the best space in the exposition. We hope that this society will secure from the New York legislature an appropriation that the State Department of Agriculture may be properly represented at the exposition this fall, as it was last year.

THE PRESIDENT: We are glad to know that quality is going to count next year. There is no doubt that if it had counted last November New York would have taken the first prize. Mr. Van Deman was disappointed when he found that quality was eliminated, and said he would never judge again with the most important qualification omitted.

The chair announces the following as the Committee on Nominations: Clark Allis, Medina; C. Fred Boshart, Lowville; E. H. Dollar, Heuvelton; Samuel Fraser, Geneseo; F. W. Sessions, Utica.

The meeting was then adjourned.

AFTERNOON SESSION

The meeting was called to order in the Assembly Parlor at 2:30 p. m., by President Pearson.

THE PRESIDENT: We are very fortunate in having as our first speaker one who has won a wide reputation as an authority on his subject. Professor Warren has been called upon to deliver many addresses, largely because of his work in the farm survey line, in which work he took up the practical side of farm accounting and discovered some features of the question which before had been very imperfectly known. G. F. Warren, professor of farm management, New York State College of Agriculture, will now speak to us.

COST ACCOUNTING ON FARMS

G. F. WARREN

There are two points of view in this subject. One is the profit or loss on the farm as a whole. The other is the detailed analysis of the farm, showing where the gains and losses occurred that made up the final result.

Many persons compare the farmer who has five thousand dollars to thirty thousand dollars of capital invested with the day laborer in the city who has no money. The farmer is a highly skilled worker. He is also a business man. He must make interest on his capital and pay for his work before the farm can be said to pay. During the past six years, members of my department have secured receipts and expenses from two thousand four hundred and nine farms, taken just as they came, in fourteen townships in three counties. One-third of the farmers failed to make hired man's wages, in addition to five per cent. interest on their capital. One-third of them made wages. One-third made more than wages. A similar study in New Hampshire shows that less than one-third of the farmers make farm wages. Unpublished results from five other states give similar results.

The usual farm wages in New York are about thirty dollars per month, with use of a house, garden and some farm products. It is safe to say that less than one-third of the farmers make more than this, in addition to five per cent. on their capital. There is a chance to make a good living on a farm if one has energy and skill. But city people are now very much misled as to profits that they may reasonably expect in farming. Most of the fabulous profits that we hear about originate in the magazine and real estate offices.

Farming is much like other business enterprises. It requires capital, experience and work to make it a success. The farm as a whole is made up of several enterprises, some of which may pay and others may not pay.

Most of the reports on cost of production are efforts to show how rich a farmer becomes if he raises a certain crop. There are published in New York reports in which corn silage is valued at two dollars and fifty cents per ton in order to make the cows pay. Other reports have it valued at six dollars per ton in order to make the corn show up well. Hay is charged to cows at ten dollars per ton and credited to the hay field at fifteen dollars to twenty dollars. In this way, it is easy to figure a profit on anything except on the farm as a whole. Usually about one-third of the cost is omitted in such estimates. The *Crop Reporter* has published estimates on the cost of growing corn, oats and wheat. These estimates include about two-thirds of the cost as found by actual cost accounting.

Some of the items of cost that are commonly omitted are interest, depreciation, use of machinery, use of buildings and cost of water, to say nothing of telephones, freight, insurance, stamps, etc.

According to the newspapers, the tariff commission has just reported that the farmer gets two dollars and twenty-three cents for the wool in a twenty-three-dollar suit of clothes and that his profit is sixty-eight cents. It would be exceedingly interesting to see just how they discovered that his profit is sixty-eight cents. The lamb and wool business are inseparable. The feed of grain goes to grow the wool and feed the lamb at the same time. Just how has this interesting result been arrived at? Our studies on New York farms seem to indicate that while some farmers make a profit on sheep, the average sheep does not begin to pay for its feed.

If you sit down to answer somebody's question on how much it costs to raise a crop, you will probably put in the use of the land, the seed, the fertilizer, the taxes, and the labor, but not at what it costs. What does a thirty-dollar-a-month man cost? Not thirty dollars a month; no, indeed. Who paid interest on the money invested in the tenant house? You say, " Father built the house." You may as well say that father built the railroad, therefore, the railroad need not make interest on its roadbed. The hired man gets milk. A man never forgets to credit cows with all the milk, but he forgets to charge what the laborer got. The hired man has wood and the use of horses and a whole lot of other things before the year is done. He incidentally gets part of his time off. A hired man usually costs eighteen to twenty-two cents per hour, not twelve to fifteen, as is often figured when you want to make the crop pay. Then the owner's time is often put in at ten to fifteen cents an hour.

Horse labor must be charged at what horse labor costs, not what you think it might have cost. We find the horse labor on the best managed farms usually costs from twelve to thirteen cents an hour per horse, not per team, for the time out of the barn. For ten hours a day, that is two dollars and twenty-five cents to two dollars and fifty cents a day for the team alone, and about one dollar and eighty cents for the driver. Horses lose so much time that the cost is very high.

But this is not all. How many of you have thought of the equipment? What does the equipment of the machinery cost? The only way to tell is to keep a set of accounts and charge machinery with all it cost you, plus interest on it. Machinery must be charged with all the expenses of labor, repairs, original cost, interest on capital, and buildings to house it. Machinery usually costs about four cents per hour on good farms, or eight cents per team hour. Add this to the two dollars and twenty-five cents a day for the team, one dollar and eighty cents for the man, and we have four dollars and eighty-five cents for a man, team and machinery for a ten-hour day. On some farms, the cost is less. On as many others it is more. In other words, a farm team on our best managed farms rarely leaves the barn for less than forty-five to fifty cents an hour. You may say, "We can hire a farmer and his team for three dollars." This can sometimes be done for the reason that the farmer must keep a team and if he can pick up three dollars extra on the side some day when it is not busy, he is that much ahead.

Interest is another charge often omitted. Suppose you plow the land for your oats this fall. Who paid the hired man this fall? Your banker with no interest? That plowing cost is tied up from this fall until next fall when your oats are harvested. If it cost you one thousand dollars to grow a certain acreage of crops, it is probable that one thousand dollars has been tied up for six months. You cannot get this money from your bank for nothing. This thousand dollars cost usually means an interest cost of twenty-five dollars.

Have you seen the high profits made from chicken farms? Chickens are nice things to figure on, because you can take one as a sample and then multiply it so easily and get so much. Did you ever see in the items of cost extra insurance for a permit to put the incubator in the cellar? Or should this be charged to your personal account because you had the privilege of living over a thing which was likely to blow up some time?

Who ever heard of freight or stamps as a part of the cost of production on farms? A farmer is not supposed to use stamps or telephones. When the telephone is used to get threshers to come in, for instance, is it not a part of the cost of producing wheat? The manure charge is forgotten when we figure how rich we may become by growing crops, but it is never forgotten when one is figuring on cows.

Who ever heard anybody figure that the water was part of the cost of producing the farm products? There are farms in this state where people have tried to put in running water, where it cost them a hundred dollars a year, besides labor, interest, and depreciation. Water costs money on a farm, a good deal more than it costs in the city. As evidence of this, you know how quickly a farmer will tap a city water pipe when it passes his home and will let him have water at city prices. He recognizes that city water rates are cheaper than farm water. Water is part of the cost of producing milk, even if it does not get directly into it.

MR. HALLOCK: Do you recommend every farmer to keep cost accounts?

PROF. WARREN: Not at all. I recommend every farmer to take an annual inventory to see how much stock and stuff he has and keep receipts and disbursements. We do this work in co-operation with the farmers, so that we do a good share of the work. The farmers are glad enough to see the results, and it affects the type of farming.

MR. TAINTER: Do you mean to say you would not advise farmers to keep accounts like that?

PROF. WARREN: I would advise farmers to keep such accounts if they know how. I think a young man starting out to farm, not merely for to-day but for forty years from now, should keep cost accounts right away. It will take any man only a couple of minutes a day, and at the end of the year, it will take him nearly a week. I think a young man should learn how. When you ask if I would advise old farmers, I say, "No."

MR. WILLIAMS: I do not know a man in our town who loses money on sheep, ordinarily.

PROF. WARREN: Here are the figures on six hundred and five farms, which had an average of twenty-four sheep per farm. This is for six hundred and five farms in Tompkins County, the average of all the good, bad and indifferent, the twelve-dollar man with the rest; twenty-four sheep per farm. The average number of lambs raised per sheep above the number required to renew the herd was .78; the average number of lambs sold per sheep was .64.

The average is always low. We think averages are low because we can do better. The average pounds of wool per sheep were 5.99, which sell at one dollar and fifty cents. Gross income from the sheep for wool and meat was five dollars and fifty cents, which does not begin to pay. Five dollars per sheep will not pay in New York State.

THE PRESIDENT: It gives me great pleasure to announce as our next speaker Senator T. Harvey Ferris, vice-president and counsel of the Citizens Trust Company of Utica, who, at the eleventh hour, kindly consented to speak in the place of President Taber of his company, who is unable to be with us.

BANKING IN ITS RELATION TO THE FARMER

T. HARVEY FERRIS

This subject ought to be divided into three classes: First, the relation of the farmer to the bank; second, the relation of the bank to the farmer; and third, how it is going to be promoted.

I can tell by your looks that I need not say anything on the subject of how the bank helps the farmer. I know that all of you have your bank accounts, pay by check, send your money down by the rural free delivery man, and all that sort of thing. To this audience, anyway, I do not think it is at all necessary to deliver a lecture upon the subject of the importance of the farmer's keeping a bank account. I do think, however, that this point has been overlooked by the banker.

At the expense of being personal, I will go into some history. When Mr. Taber and I looked over the Citizens Trust Company, about four years ago, we found it had one million three hundred and ninety-nine thousand dollars in deposits. Our principal rival had five million dollars in deposits; it was backed by the strongest men in Utica; it had on its board of directors almost every leading manufacturer and banker; it had become about as safe as the Rock of Gibraltar; everybody thought that if they were in Utica and had any money, that was the place to go. There was also a savings bank with some fifteen millions. It was obvious that Utica was not a good place to get money for the bank. We hit on the farmer, therefore, as the available source of supply. For four years we have industriously advertised in the country, circulated our advertising matter among the farmers and looked after the farmers' deposits, making a specialty of banking by mail. On the first day of January we had over four million dollars of deposits in our trust company. Those additional deposits of two million seven hundred thousand dollars did not quite all come from the farmers of Oneida County but enough of them were started from that part of the country, so that the city man saw it was a good thing and pushed it along. I say, as a banker, the first proposition to-day to get money is to secure the farming community. They leave money with you longer than the city man, who deposits money and draws a check to take it out before he gets back to his office.

Circulars from the Isle of Pines show that one can make eight hundred dollars an acre by raising pineapples. I find on inquiry in Oneida County that I can make a thousand or twelve hundred dollars an acre by raising garden truck. Another circular, from the state of Washington, shows that I could get twelve or fifteen hundred dollars an acre there. I think the point is this: We, in the state of New York, do not know the capabilities of our land.

The average yield per acre, according to the 1900 census, was on all farm land ten dollars and seventy-three cents, and on improved farm land, fifteen dollars an acre, which seems frightfully low. If it is possible to get, in some instances, a thousand dollars, and, in some instances, fifty or seventy-five or a hundred dollars an acre from farm land, it should be possible to make farm lands in the state of New York average fifteen or twenty dollars an acre. If the twenty-two million improved acres of farm land in the state of New York can be made to pay twenty dollars an acre, instead of fifteen, some banker is going to get a hundred million dollars a year to use. If you could make a manufacturing business in New York increase its business a hundred million dollars, every banker in the state would say, "Come on, boys, and help." Here is a proposition where you ought to go to twenty dollars an acre easily, and before many years I believe you will go to thirty dollars. Every dollar you have goes back into the bank. There is a concrete, possible proposition for any banker to take up. I do not know any reason why the New York State Agricultural Society could not say to the Bankers' Association of the state and the Trust Companies' Association of the state: "We are engaged in booming New York State as a farming community. We are producing now some two hundred and forty-five million dollars and the land in the state is perfectly capable of producing five hundred million dollars; all we want is to have you take hold and help us." I do not know that I have anything very practical to suggest, but it occurs to me that you might do worse than to appoint a committee from your association to interview the Bankers' Association and the Trust Companies' Association, because, if we can get you to earn that hundred million dollars and put it in our banks, it is worth a million dollars to us in dividends and we want it.

THE PRESIDENT: Now, to bring up this question, How can the banker help the farmer? It is a very important question. What do some of you say?

MR. FREDERIKSEN: This question has been discussed these last few years all over the country. I was interested in reading in the *New York Times* how the Western bankers founded an association which met and discussed the subject of what the banks can do for the farmers. It is a live question out there just as it is here. I was very much disappointed in finding at the end that all they proposed to do was to put out a few premiums for the best farmers, for the young man who could raise the best cows, get the best results, etc. They do not go to the root of it.

There are two ways in which the bankers, capitalists and railroads could do something for the farmers. In the first place, we need better mortgage banks, where we can get money at a cheap rate. The capital is perfectly secure at most of the farms. We ought to get money at four per cent., instead of paying six per cent. for improvements. The second is cooperation. The way to reduce the cost of food and the cost of living is by cooperation. The farmers want cow testing associations, breeding associations; they want to buy fertilizers, feed and all that sort of thing in colonies, instead of going to the merchants in the towns and swapping cows for fertilizers; they want to get together and have a man attend to the business. The average man is too busy to go to town every day and try to sell his produce.

This can be accomplished only by cooperation. In my native country, Denmark, everything is done on the cooperative plan. How do the bankers there help the farmers to cooperate? In this way: They are scrambling over each other to get the farmers to take money at three and one-half and four per cent. There are cooperative creameries in which the farmers never lose money, and the bankers furnish all the money to the farmers, who stand one for all and all for one, as security for the money. That is the best security the bank can have; it is better than double the amount. We need the bank that takes care of cooperation and lends money to the farmer for cooperation.

MR. COX: The Bankers' Association might, in addition to what has been said, give remarkable aid to the farmers' interests by assisting the farmers' bills for parcels post and reforms in the markets.

PROF. WARREN: In New York State there are farms worth fifteen dollars and some worth a hundred dollars an acre. There is a tendency among bankers to loan by the acre, and they sometimes lose by loaning twenty dollars an acre on a fifteen-dollar-an-acre farm. Therefore, they say they will not lend twenty dollars on any farm. They put their loan value, to be safe, on the poorest possible farms. What can we do about that?

MR. ROWE: Let the bank put a few farmers on its directorate.

MR. BURRILL: Our young men in Illinois, brought up in the town and having the confidence of the citizens, borrow an unlimited amount of money on land in that section, whereas, a young man in the farming business in New York State can only borrow a very small percentage of the valuation.

SENATOR FERRIS: One man speaks of mortgage banks being created to make mortgage loans upon farms. That presupposes some kind of legislation from the state and practical backing up of mortgage loans on farms by the state of New York, because if you rely on individual initiative you have to get at it in some other way. I think he is entirely right in the evil he is trying to cure. We should be able to borrow money upon farm lands more easily, but I doubt if his method will work in the state of New York for some time. We had a scheme here, a good many years ago, called "Loan Commissioner's Mortgages." The result was that every time the mortgage was made the state got the land.

I do not think you will get four per cent. on loans in the state of New York, except on big investments. Large companies are putting out their stock at seven per cent. and are glad to get money at that. The price of living has increased, and interest, I know, has gradually increased. To-day you cannot get money at four per cent. for working investment nearly as easily as you could ten years ago; you have to rely upon five or six per cent. stuff and get bigger prices. You are better able to pay seven per cent. to-day than your father was to pay four. You are getting thirty and forty cents for your eggs, which used to sell for fifteen or twenty, and butter the same way. You must come to a little higher rate of interest. As a matter of fact, there is no doubt at all but what we shall have to make some arrangement as bankers to reach you as farmers and come to taking mortgages on your farms. There is no attempt to discriminate between farms. That came about from the so-called slump of fifteen or twenty years ago. Most of the banks lost money at that time and they do not know anything more about it now than when they decided that they knew nothing about farms. We have commenced doing differently. When a man applies for a loan we put on our directorate a practical farmer, who looks up the farm.

The question in that Illinois proposition is just this: Farming is the principal business in Illinois; the wealthy men are all farmers. The average man one meets in Illinois knows all about farming. People do not know enough about farming in the state of New York. Go to some bank which caters to farmers. They will be glad to take loans because they know the land is coming up. You are right in the center of the finest state in the world. If you put fifteen or twenty million people in the state of New York during the next twenty years — and you will when you put in your tile drains and cultivate the waste lands — land will be land

The President: The next speaker is F. S. Welsh, agriculturist of the New York Central Railroad.

THE RELATION BETWEEN RAILROAD RATES AND THE COST OF PRODUCTS TO THE CONSUMER

F. S. WELSH

Of the many economic questions which have confronted this nation at various times none have been more serious nor of greater interest to individual citizens than that occasioned by the steady increase in the price of the necessities of life. The resulting strain upon the consumer's pocketbook is sufficient to account for the interest in this question and has naturally caused many inquiries as to the underlying reasons.

Political economists have found many causes contributing to this rise in prices, among them the increase in the world's production of gold, the rapid increase in our population and the failure of our crop production to keep pace with it. In every investigation of the question, however, there has been one fact clearly brought out; namely, that, in foodstuffs particularly, there is a considerable difference in the price paid to the producer, the farmer, and that paid by the final purchaser, the consumer. Inasmuch as the producer generally lives at some distance from the consumer, it is natural to suppose that any increase in the price should be due to something which happens to the produce from the time it leaves the point of production until it reaches the consumer.

The transportation of agricultural products from the place of production, the farm, to the place of consumption, the city, is a necessity in order that they may attain their real value. It has been accomplished in many ways in the history of the world, and each succeeding method effected a saving in cost, from the time the grain of Egypt was loaded on the backs of camels and carried to the Mediterranean cities, on through the time when the Conestoga wagon brought the produce of the Eastern farmer to the city markets, until at the present time the railroad performs this service because by reason of its equipment and organization it is able to perform it more quickly and cheaply than any other agency. So, the most obvious thing that happens to the produce after leaving the producer is that it is transported, carried by the railroad. Consequently the railroad is accredited with being responsible to a very large degree for this increase in price, and the answer, "High freight rates," has satisfied many an inquisitive consumer, who was content to rest his investigation at that point. I wish today to go behind the "high freight rates" answer, and find out exactly how much the railroads are responsible for the difference in price that the producer receives and the consumer pays.

The freight charges are always ultimately paid by the final purchaser, the consumer. The producer pays no part of them, although it is true that the distance he lives from the points of consumption, and, consequently, the cost of transportation for that distance, to some degree affects his price and acts as a protective tariff to the advantage of the producer who lives the nearer. In our own country, for instance, the New York farmer enjoys this advantage by having ten per cent. of the nation's population within his own state. The price a consumer must pay for any article is the charge for production, plus the charge for transportation, plus, of course, the dealer's charge. For instance, the potato dealer in New York City charges his customers for a bushel of potatoes (1) what he had to pay for them, (2) what he had to pay for transporting them, and (3) the charge for his services, including handling, interest, rent, shrinkage and other losses.

I wish to call your attention, however, to the part that the railroad actually receives from the consumer, and, in order to better understand just what proportion of the final cost the freight charges constitute, let us assume certain representative instances, and, since we are farmers, let us make these instances of agricultural products.

According to statistics collected by Mr. Duffy, of the Indianapolis Investigation Commission, in September last, the New York farmer received an average price of 5 cents a pound for pork, while the New York consumer paid an average price of 25 cents a pound. The freight rates from Syracuse, a central point in New York State, to New York City, in carload lots, is ¼ cent per pound. Here is an average increase of 20 cents per pound, of which the railroad receives ¼ of a cent. In other words, the freight charges amount to 1 per cent. of the price paid by the consumer, and 1.25 per cent. of the advance in price over what the farmer receives.

The New York farmer is now receiving about $1.00 per bushel for his potatoes. Potatoes are now retailing in small quantities to the consumer in New York City, at the rate of $2.80 per bushel. and upwards. Freight rates on potatoes from Syracuse to New York City are 8 2/5 cents per bushel. Here is a difference of $1.80 per bushel from the producer's price, of which the railroad receives 8 2/5 cents, or 3 per cent. of the price paid by the consumer, and not quite 4.7 per cent. of the advance in price over what the farmer receives. This is a relatively larger proportion than in the former instance because the bulk and weight of potatoes make them expensive to carry, more so than almost any other commodity.

According to the *Crop Reporter,* of the United States Department of Agriculture, dated November 15, 1911, the New York farmer was receiving an average price of 31 cents per pound for butter. Butter was selling to the consumer in New York City at 39 cents per pound. The freight on butter from Syracuse to New York City is 3/10 of a cent per pound, so that, of an advance of 8 cents per pound, the railroad receives 3/10 of a cent, which is about .77 of 1 per cent. of the consumer's price and 3.75 per cent. of the advance in price over what the farmer receives.

I inquired the other day, in the country, in the vicinity of Syracuse, as to the price paid for newly-laid fresh eggs. I was informed that 39 cents per dozen was the price. At that time fresh eggs were selling in New York City at 53 cents per dozen. The freight on eggs from Syracuse to New York City is, estimating an average of nine eggs to the pound, 2/5 of 1 cent per dozen. In this instance there is an advance of 14 cents per dozen, of which the railroad receives from the freight charges 2/5 of 1 cent, or less than .39 of 1 per cent. of the price the consumer pays and less than 2.9 per cent. of the advance in price over what the farmer receives.

The rate on flour from Syracuse to New York City is 9 cents per 100 pounds, or at the rate of 4½ cents per 50-pound sack. The same flour is bought by the consumer in New York City at the rate of $1.85 per sack. In this instance the freight charges are less than 2.5 per cent. of the ultimate price paid by the consumer, but from the nature of the commodity it is difficult to estimate the proportion of the producer's price.

It is interesting to note that in every instance which I have cited, and these are but a few representative ones, the amount that the railroad receives for transporting the commodities a distance of approximately 300 miles is less than 3.5 per cent., averaging approximately 1.5 per cent. of the final cost of the article, and averaging less than 3.5 per cent. of the advance in price over what the farmer receives; while in nearly every business where the returns depend upon the amount of services rendered, the commission charged is at least 5 per cent. of the value of the property handled and, more often, 10 per cent. of it. So, the answer to the inquisitive consumer's question, " High freight rates," is, when speaking of the average farm product, only 3.5 per cent. true. The remaining 96.5 per cent. of the difference in price over what the farmer receives must be accounted for in some other way. It covers, of course, drayage, handling, storage, commissions, etc., but these I do not propose to discuss. I wish only to call attention to the share which the railroad receives. As refuting the contention that increased freight rates are responsible for the more than 87 per cent. average increase in price of all kinds of farm products in the past twenty years, statistics issued by the United States Bureau of Labor show that there has been during that time a reduction in the average freight rate charged by the railroads of over 20 per cent. per ton per mile.

There are, of course, many causes contributing to the increasing price of these commodities which go to make up the cost of living, and, inasmuch as the transportation of these articles is a necessity, the railroad must necessarily be responsible for some of it, if it acts as a transportation agency. It is, however, manifestly unjust to attribute to the railroads the responsibility for the greater share of the increased price of commodities, when, as we have seen, they receive on an average considerably less than 3.5 per cent. of the increase in price over what the producer receives for his commodity, and less than 1.5 per cent. of the final cost of the product to the consumer.

THE PRESIDENT: Perhaps it would be well to hear the other representative of the railroads before we have the discussion. If there is no objection, we will now hear from F. R. Stevens, agriculturist of the Lehigh Valley Railroad.

THE RELATION BETWEEN RAILROAD RATES AND THE COST OF PRODUCTS TO THE CONSUMER

F. R. STEVENS

Of the many factors that are to-day influencing the prosperity of the Eastern farmers, the largest is probably that of economical delivery of produce from the grower to the consumer. It has been claimed by some that this is purely a consumer's problem, that the profit derived in total by the farmers is sufficient on the present basis and that the consumer is, therefore, paying for unnecessary handling between the producer and himself. I do not agree with this view. It is true that we are getting a better price for our produce than in some years past, but those years past have given very meagre returns and we are entitled to the proceeds of this great time of prosperity. In other words, the farmers of to-day are entitled to somewhere near the price that their produce is worth to the consuming public. This question has been agitated at length in agricultural publications and many unwarranted criticisms have been made as to the cause of the farmer's receiving such a small amount of the consumer's dollar. The railroads have been called upon to bear the brunt of this criticism and receive a large share of the blame, largely, I presume, because we are handy. The railroads of the country are a factor in this matter without any question, as necessary a factor as the producer of crops. Take out the transportation of crops and our scheme of supplying the markets of the world falls flat. The time has passed for any juggling of figures or misunderstanding as to just what portion of the consumer's dollar goes to our transportation companies. If the Eastern farmer is to succeed as he should, this question must be settled and settled intelligently.

The railroads of the country do not have to apologize to-day for the rates which they are charging. I have taken from the freight department a list of the tariff charges on some of our principal items of food and clothing from Geneva, one of our principal agricultural centers, to New York, the center of consumption. The first item is milk, on which we charge one of the highest rates of freight, being 7/10 of 1 cent per quart. And it must be remembered in this, that not only is the milk transported to New York, but all cans are returned free of expense; that a high type of equipment which is used for nothing else is required for transporting this milk; that the cars are iced and cooled at the expense of the railroad, which includes the labor of icing and the furnishing of approximately four tons of ice per car in warm weather; that the labor employed is first-class in every respect; and that the running time of these trains from Geneva to New York is second only to our limited passenger trains and that all other traffic is sidetracked to give it the right of way. Milk, therefore, which costs the buyer 4 cents at the shipping station costs him 4 7/10 cents in the city of New York.

On potatoes the rate is 9 cents per bushel, on beans 9 cents per bushel and on eggs, including the weight of the package, 51/100 of 1 cent per dozen. On a suit of clothes, with an average weight of 7 pounds, the freight is 2 9/20 cents; on an overcoat, the same amount; on a pair of shoes it is 7/10 of 1 cent. Figuring on this basis and using the highest retail market quotations of January 11, 1912, the railroad receives 7 4/5 cents of the consumer's dollar spent for potatoes, 3 7/10 cents of every dollar spent for beans, 1 27/100 cents of every dollar spent for eggs and 13 7/10 cents of each dollar spent for milk. The railroad receives this money for transporting these goods 343 miles. These freight rates are on file at all stations. There can be no question about them. Also, the annual reports of the railroads, published in accordance with the law, show just what percentage these rates allow the railroads to earn on the money invested. I know of a farm which pays 34 per cent. on money invested, and another that pays 45 per cent. on money invested, not that they are better farms than those surrounding, but because they are efficiently managed. The railroad which I have the honor of representing is reputed to be efficiently managed, and yet it is unable, on a basis of these rates given, to earn one-half of 34 per cent. on the money actually invested in the road.

Increased cost of labor and material is throwing every road into increased activity to keep up earnings. It is necessary to establish industrial and agricultural departments in an effort to increase production and, in general, to increase prosperity that general business may increase. Regardless of what the relations between the railroad company and the producer have been in the past, the future must be one of understanding and cooperation.

During the past two years, since I have been agriculturist for the Lehigh Valley Railroad, many things have been brought to my attention to show clearly where a large part of this consumer's dollar goes. In the first place, our wagon roads should be improved. According to a report by the industrial commissioner, it costs more to transport the produce from the farms to the shipping points on the railroad over the average roads of the United States than it costs to operate all the railroads in the United States. Secondly, according to a report by the State Experiment Station, at Geneva, their best cow, Satie, produced milk in the year of 1908 at a cost of $0.655 per one hundred pounds, while their poorest cow, Mabel, produced milk at a cost of $1.838, thus taking away part of the profit which Satie gave, and leaving the farmer poorer because she was on earth. The dairies and the farms of New York State have too few Saties and too many Mabels.

A short time ago the industrial commissioner of our road reported that a concern in New York City wished to handle apples directly from the New York and Pennsylvania farmers. I thought it a good time to increase the percentage of the consumer's dollar which the farmer would get, and we scoured the fruit belt along the line of our road to find an individual or group of individuals who would guarantee to this large concern two, three or four carloads of apples per week, as they might specify and demand. We failed to find such a man and that line of stores is to-day buying apples from the Western apple belt, not because the Western apples are better or prettier or in greater demand in the New York market, but simply because the Eastern farmer with his storehouses full of apples could not deliver the goods.

There is another concern owning a long line of grocery stores which is anxious to-day to buy potatoes, beans, cabbage and, in fact, all produce which they can sell direct from farmers, but there is no one individual or combination of individuals who can go to that concern and guarantee a regular and reliable supply of these goods. In short, the great markets of the world to which we lie so close are ready to receive produce direct from the farmer and distribute to the consumer for a small percentage. The railroads are ready and anxious to cooperate with you, but let us look the matter square in the face and admit that the farmers are not ready to deliver the goods. This means cooperation. It means rising above the petty jealousy which has prevented cooperation in the past. It means storehouses along the line of the road for a regular outlet of the farm products throughout the season. It means business judgment and business management. These things may be of slow growth, but there is no other solution, as I see it, of this great problem before us, and the quicker we get together the better. Let us look to ourselves for the solution of this problem and solve it as quickly as possible.

SENATOR TRAVIS: I am a dealer in some of the products which you men grow. In looking through your program this morning, I found that you had representatives of the farmer and railroad man, but had failed to ask a single man who sells your goods to come. I am a jobber.

I heard a man say that the price of potatoes in the state last year was a dollar a bushel, and where he lived they brought about two dollars and eighty cents a bushel. Is it not true that when the retailer sells his potatoes by the the quart it is impossible for him to obtain more than twenty-two or twenty-three quarts cut of a bushel? Does the grocer not have to cull out every single small potato and give nothing but the smooth ones and the pick of the best in the bushel? Then he must sacrifice his culled potatoes to somebody else. When the farmer sells his quart for five cents a pound he gets five cents for everything, small and large, good, bad and indifferent.

One dollar a bushel to the farmer for potatoes and two dollars and eighty cents to the grocer for the same bushel would mean tremendous profit to the retailer. I do not know where that man lives. I live in New York City where the grocers who sell any quantity by the quart invariably have stores in the cheaper part of the city, where poor people live, while the people living in better parts buy them by the basket, by the bushel or by the barrel. The potatoes said to be sold at two dollars and eighty cents a bushel were probably Long Island potatoes, carefully culled.

MR. WELSH: I still claim that the railroad receives from a bushel of potatoes, from Syracuse to New York City, eight and four-tenths cents per bushel. I said that potatoes were selling in New York City to the consumer, in small quantities, at the rate of two dollars and eighty cents per bushel. I got that quotation from a grocer at the corner of East One Hundred and Eighty-seventh Street and Valentine Avenue, New York City. These potatoes, he said, were New York potatoes. That is all the information I can give you on that point.

I think you will also bear me out that I mentioned that a dealer's charge must include handling, which, of course, increases the amount he must charge, because it increases his handling expenses. It included also shrinkage and interest and his rent.

MR. FINDLAY: We in the state of New York are milk producers, and egg men, especially in my part of the state, and I think it is not right for the railroad to charge so little on some things that they have to charge for eggs ten or twelve cents a crate, and for taking a can of milk sixty miles, twenty-six cents. The railroads print those rates in the office, and receive them every day. If they can bring a case of eggs from Syracuse, three hundred miles, for the small rate they claim, why do they not take a can of milk, which does not weigh one hundred pounds, from any part of Orange County to New York, for less than twenty-six cents? For the carload, about two hundred and fifty cans, they charge a small fraction less than twenty cents a can. Do you not think it is a swindle on the railroad's part to make the milk-producing farmer help out the other man?

MR. STEVENS: I do not represent any express company; I am speaking from the standpoint of the railroad. The figures quoted on eggs were freight rates on eggs, in carload lots, for a long-distance haul, and do not apply to express rates.

The other points I can answer this way. It is necessary to have some return for equipment, and, in operating a railroad, the person investing money in it is entitled to a fair return for that money invested. On the basis of what you pay for milk, the railroads do not earn as large a percentage on a dollar invested in their stock as you do on a dollar invested in your farm.

PROF. WARREN: When these farmers made forty-five per cent. on their capital, at what value was the farmer's time placed?

MR. STEVENS: I took the farmer's statement.

PROF. WARREN: What were those costs of producing milk at the Geneva station? Were they not the cost of milk, leaving out the cost of feed? That is the usual experiment station way.

MR. SMITH: It is a feed cost.

PROF. WARREN: That is the fault of experiment stations, uniformly. They publish the value of the milk so that the cost of the feed is profit, which is not profit.

MR. GEROW: How can a farmer keep twenty-five cows and five hundred hens, and obtain the railroad rates for his product?

MR. WELSH: I think only by cooperation.

THE PRESIDENT: Senator Travis is one of the leading men in New York City whose business it is to handle farmers' products. He is on the other side, so to speak. I am very sure that the Senator is just as anxious to get at what is true and right as the farmers are. We are glad to extend to him the opportunity to give us his views on this subject, if there is no objection.

SENATOR TRAVIS: I fancy there is not another man in the room who will agree with me. I realize that I am addressing people whose point of view is entirely different from mine.

It has been my good fortune to represent the sixth senatorial district of this state, which is very largely made up of business men, and is located in the city of New York, in the borough of Brooklyn. In my district, which is composed substantially of one class, there live thousands of men who are connected with the produce business in one form or another, either affiliated with the New York Produce Exchange or the Mercantile Exchange, or, like myself, connected with the green fruit and vegetable business. My own vocation is that of a jobber, one who buys his produce in the country, or in the city of New York, as seems most profitable, and then distributes it.

The question as to whether you shall sell direct to the grocer does not affect me in the slightest. But, just as long as the Almighty grows little apples and grows big apples, and little potatoes and big potatoes, there will be some grocerymen who will want the big potatoes, and others who will want only the small, because they are cheap; and there must be somebody to distribute the big ones and the little ones. I hope to be one of those distributors. So that any agitation or any law that may be put on the statute book for such a violent change in business does not in the least frighten me, nor would it you. If you go to the centers where the goods are sold in large quantities, and make as close a study of the conditions as they exist there as you do of the conditions on your own farm and in your own neighborhood, there will be no cause for fear.

There have been some men in the state for years who have been insisting that the men who sell your products on commission are the greatest rogues on the face of the earth, and perhaps they are. I do not, however, lose sight of the fact that I have repeatedly bought farmers' apples when I found they had left the stovepipe in the middle. The Man of Galilee had one out of twelve who was a crook. There is no vocation in life to-day where a certain percentage is not dishonest. We in New York City do not claim that there are no men who sell your products on commission who are not dishonest. The commission merchants in the city of New York realize this just as fully as you do, and they have taken steps to drive out of the trade that very class of men, and we wish you would do the same among yours. There is not a man in this room who can truly say he does not know a dishonest farmer. May I refer to the recent seizures by the city of New York of some eight thousand containers offered by farmers as bushel baskets, and said to hold a bushel of vegetables, whereas they held a much smaller quantity.

We had an annual meeting of commission merchants in New York last week, when one thousand one hundred men and women gathered to discuss ways and means whereby they might elevate the business. Now, what have you done? You have formed associations in certain parts of the state of New York. There are several on Long Island. In this building but two years ago the president of one of these associations said that three local Long Island associations had disposed of six million dollars' worth of products on commission and that they had lost less than four hundred dollars in bad debts. Is there any merchant in this room that can sell six million dollars' worth of goods and not make a greater loss than four hundred dollars? Now, you demand of us that the commission merchant shall first be bonded. You first demanded that the commission merchant should be bonded against insolvency, and you brought up a bill requiring that he should be bonded not less than ten thousand dollars, at the discretion of the Commissioner of Agriculture, and that the state of New York should be your collector. Have you stopped to think that there is a great difference between bonding a man who is an employee in a banking office and bonding a man as to his solvency to the extent of ten thousand dollars or more? It would be a godsend to the bonding companies, and would not affect the largest commission houses in the state of New York, but it would create as near an anti-Sherman Law trust as I know of in the trade, because it would eliminate at least one-third of the most desirable commission houses and grocers that we have. It would prevent any poor young man ever engaging in the commission business or as a retail grocer.

In the city of New York we have certain houses with fixed charges exceeding forty thousand dollars a year, and those houses will not take any goods on commission unless they can handle them in large quantities and at a reasonable commission. Only last winter the Peach Exchange of Georgia sent a representative into one of these houses, and said: "You have been receiving eight per cent. for the sale of Georgia peaches. We propose that these peaches shall be sold for five per cent., and we will take the other three." This house very promptly said: "It costs us so much money to do business; we cannot sell your peaches at five per cent.; you may take your account elsewhere, and we will endeavor to get as many peaches as possible direct from the farmers." They sold more than all the others put together, at the regular rate of percentage. Then we have the next grade of houses. These are run by men of very modest means but strictly honest. Let me say to you that when a man comes into my store and says, "Mr. Travis, I desire to open an account with you," capital is the last thing I ask of him. First, I want to know whether he is honest; second, I want to know whether he understands his business; and third, how much money he has. Now, this second grade of houses can afford to handle some products that the others cannot. Then we have the third grade of houses, of exceedingly limited financial ability, run by men who stand for integrity among us, but if you put a bond of ten thousand dollars, or five thousand dollars, on them, a great many of them would be forced out of business.

Secondly, I hear that you want every man, or firm, handling any product of the farm, on commission or percentage, licensed, and that you want the Commissioner of Agriculture to be the sole judge as to whether a house may handle goods on commission or not, and, whether commission man or retail grocer, he shall have no recourse to the court. I know you will not agree with this, but after you have thought it over perhaps you may, at least, in part. A first-class house, with all of the equipment, the rent, running from two thousand dollars to five thousand dollars a year, with salesmen demanding from twenty-five dollars to eighty dollars a week, with a credit man, with all the accessories of a first-class house, has before it for the next year or two fixed charges of twenty-five thousand dollars a year. A circumstance just like this happened in two of the largest houses last spring. Each received a car of Norfolk potatoes by railroad. The one who buys potatoes thought that at three o'clock in the morning there would be a high market, and he bought a car from one of the houses. The other car did not come out until nine o'clock, when the market had all gone to pieces. My salesman bought that last car of potatoes for two dollars and twenty-five cents a barrel, whereas the other went at three dollars a barrel, all grown by the same man, having the same stencil on the barrel, and shipped the same day. The average farmer, thinking that the second man stole seventy-five cents, would go to the Commissioner of Agriculture and say: "That man is a thief." And the Commissioner of Agriculture would immediately say he could not sell any more goods on commission. Would you involve twenty-five thousand dollars a year for the next two years, and allow yourself to be tied up into bowknots by somebody who did not know anything about the conditions? Not only that, but one of the greatest things that business men in this state have to fear is blackmail, and that would open the door to the worst kind of blackmail.

In the third place, you say that the commission merchant shall render, in giving the account sales, the name and correct address of every buyer. Last year I made this proposition to the committee on agriculture in the assembly and senate: If they would go to New York City on any Monday morning and visit the Pennsylvania Railroad dock for three or four hours, studying the method of selling and handling the goods, and come away thinking it possible for the commission merchant to give the name and address of every buyer, I, on behalf of the commission merchants, would withdraw all opposition. I never once induced them to do it. As a matter of fact, to give the name and address of every buyer is a physical impossibility. It is easy enough to obtain the names and addresses of the credit buyers; and there is no difficulty in your going to any one of the houses and obtaining a list of what I buy from them, because I buy on time; but there are thousands who buy in quantities who cannot possibly tell you their name and where they live. If you go in the auction rooms you will find that the auctioneers do not attempt it; they cannot pronounce these Greek and Jewish names; they call them "Potatoes No. 1," or "10," "Peanuts No. 10," or "Peanuts No. 20."

I understand, you advocate driving the dishonest commission merchants out of business. So do we. Thus far we agree. Some of you believe that by insisting on a license or on a bond you will accomplish that. Now, will you? I operated three orange-packing houses in Florida for several years. One day I went in to see a man having a very fine crop of oranges, who said, "I have just shipped two carloads to a fellow in New York City," and showed me his card. I said: "I never heard of him. There is not a commission house within two miles of that address in New York City. Did you inquire of your bank?" He said, "No." I said, "Would you have loaned him twenty-five dollars if he had gone into your house and asked you for it?" He said, "No, I would not do that." I said, "But you were shipping eight hundred dollars' worth of oranges without the slightest inquiry." Any man who can get ahead of a farmer to that extent could easily convince him he was bonded or licensed when he was neither.

I hope you will not overlook this one fact, that the commission houses in New York City have not only the man across the street or next door as their competitors, but they have Boston, Baltimore, Philadelphia, Chicago, St. Louis, Cincinnati and the various cities of this state, and eighty per cent. of the goods are shipped out of the state. The New York man has not only to compete with those in Manhattan in the same line, but in other cities. If you succeed in legislating against the men in your own state, for the benefit of those outside, you can scarcely expect to continue to have such high-grade men following the vocation of commission merchants as we have to-day.

Last spring I asked the master of the Grange to arrange a meeting in the city of New York this winter at which I would have present some commission merchants, and we would endeavor to see if we could not thresh out our differences. I now invite the Agricultural Society to appoint such a committee. Of course, I know it is utterly impossible for any large number of men always to agree. If the man up the state says, " No, I won't make a study of the methods of selling goods in the city of New York, but I am going to sit up in my farm and tell you how to do it," it is useless for us to meet. I think the commission merchant in New York City knows the situation of the farmer; he knows that the average farmer will sell his produce if he can; he also knows that the average farmer will consign it if he cannot sell it. He knows a good many of them will get two dollars for it if they can, but if they cannot they will let the commission merchant get one dollar for it. I know a farmer in New York who sent to one of the best houses in Boston, writing, "You sell these grapes at four dollars a crate or throw them in the harbor." This man knew the farmer was eccentric, so he telegraphed, " Weather warm, what shall I do?" The farmer telegraphed back, " Sell for four dollars or throw them in the harbor." Next day the merchant wired, " Can sell for two dollars;" but the farmer still stuck to " Four dollars or throw them in the harbor." Next day he received this message, " They are in the harbor."

We are prepared to show it is not always the fault of the commission merchant. Many a time I have bought a car of potatoes, all marked No. 1, and after shipping them out to the grocers in the state, received letters that in every five or six there was a barrel of culls mixed in with them. It was an accident, of course, but I had to stand the loss, and the honest farmer gained by this dishonest act.

The commission merchants are prepared to show you that frequently your mistakes are that you select houses that have no trade whatever for your produce. There is no use in sending a hog to a house that has no trade in anything excepting strawberries and raspberries. There is no use in attempting to send to New York City an article that New York City does not want but Philadelphia does. When a man sends a carload of a certain kind of apples to New York City and also sends a carload to Philadelphia, and Philadelphia beats New York City by one dollar a barrel, there is no use in saying that New York City robbed him, when New York City did not want those apples and Philadelphia did.

We have a league, and are trying to correct evils. We have cities in this country where most of you can ship, where your accounts will be guaranteed. We have another association in the city of New York among the members of which I think there has not been a single failure in fifteen years. We only ask you to meet us as men. If you are willing to meet us as men who come in contact with commission houses in Philadelphia, Boston and Baltimore, and who maintain first-class establishments, and who are amply able to pay all they owe, we will be glad to do business with you.

MR. PALEN: Why did those nine-o'clock potatoes sell for seventy-five cents a barrel less than the three-o'clock-in-the-morning ones? Were the potatoes inferior? Did they come in too fast?

SENATOR TRAVIS: No, the potatoes were perfectly good. We have a certain class of people in the city of New York who take strawberries and pay two dollars and fifty cents a quart. The very moment that the quantity on the market increases, the price drops to another class, because there are too many for that higher class. So on, all the way down. So that I have known strawberries to change one dollar a quart in one day.

MR. PALEN: They are very perishable.

SENATOR TRAVIS: Some potatoes are exceedingly perishable, too.

MR. PALEN: That does not answer the question.

SENATOR TRAVIS: I will answer it in another way: The supply and demand; nothing else.

MR. PALEN: Can you tell me what elements determine this in the short space of a few hours, on a product like potatoes?

SENATOR TRAVIS: There are too many potatoes for the demand.

MAYOR SHANK: If potatoes were selling for one dollar and twenty-five cents a bushel by commission men one Saturday, how could I sell them for eighty cents the next Saturday? Why did the commission merchants come down to eighty cents in one week on potatoes? So far as supply and demand goes, we can have several carloads of potatoes inside of twenty-six hours into Indianapolis.

SENATOR TRAVIS: To answer the first question would require knowledge on my part of the facts in Indianapolis. I know nothing about the commercial conditions as they exist there concerning potatoes. The experience of those who handle potatoes in the city of New York is that there is no product sold on so small a margin of profit by the dealer as potatoes. I am frank to say that the margin is so small that my house does not handle them.

MAYOR SHANK: Why do not farmers get more for their produce, when people pay so much? Do you not buy sixty pounds to the bushel?

SENATOR TRAVIS: We buy them by the bag containing about one hundred and sixty pounds.

MAYOR SHANK: How many pounds in the bushel do people get who buy by the peck or the quart at a time?

SENATOR TRAVIS: Potatoes should be retailed by the pound, not the quart.

MAYOR SHANK: In Indianapolis they were selling by the bushel, about forty-eight pounds to the bushel. When we bought them we got sixty pounds to the bushel.

SENATOR TRAVIS: In going to the grocer's I get more than a quart. If potatoes were sold by the pound, as in New England, that difference would vanish.

MAYOR SHANK: Grapes were selling at about fifteen dollars a ton, and we were paying twenty and twenty-two cents a basket. They cost the commission men six dollars and twenty-five cents.

SENATOR TRAVIS: You forget the shrinkage of grapes. My man came down on the train with a carload, and next morning it lacked a ton.

MR. MORRELL: Commission men are not all sinners, nor are the farmers all saints. Human nature is always the same. My experience has been that the shippers, commission men themselves, are the most dishonest packers that ever came into our country. Apples have been sold for the past three years to commission men. They packed them themselves, and many of them packed very dishonestly. Culls were put in the center and No. 1's on top and on the bottom, with a great deal of care. I contend that people are the same the world over. The commission man has every opportunity to cheat the seller, and we can prove that he does. Time and again we have asked the state to stand by the grower and bond the commission man.

They give licenses to the push-cart men. The commission men also should give a license and a bond, so that when we ship our goods we can place our finger on that man and make him pay what they are worth.

THE PRESIDENT: Senator Ferris suggested it might be well for us to have a committee of this organization to get in touch with a corresponding committee of the bankers' organization. This morning a suggestion was made that we have such a committee to get in touch with an organization of editors. Do you wish to consider the suggestion that we have a committee to work with the bankers? If you are not prepared to discuss it now, let me suggest that some one interested prepare a resolution on the subject and turn it in to the secretary, or to any member of the Resolutions Committee, so that it may be considered and brought back to us at the proper time.

MR. SCHRIVER: It seems to me that this ought to be said for the bankers: There is no class of property which has possibilities of deterioration in a very short space of time to compare with farm property. The value to-day has nothing to do with the value a few years hence, and if you are taking mortgages you must take them upon a solid basis.

The meeting was then adjourned.

EVENING SESSION

The meeting was called to order at 8 p. m. in the Senate Chamber, by President Pearson.

THE PRESIDENT: It is a great privilege and a great honor to announce that the presiding officer at this evening's session is the highest executive officer of our state, Governor Dix.

GOVERNOR DIX: Mr. Chairman and Ladies and Gentlemen: I wish to extend to you my grateful appreciation that I have been privileged to preside over this meeting. One year ago I had the pleasure of attending your meeting, in which I think, in a way, I endeavored to demonstrate my interest, and now to preside over this meeting I consider indeed an honor.

Governor Dix then invited the Reverend James S. Kittell to open the meeting with prayer.

GOVERNOR DIX: The first address of the evening will be by the Commissioner of Agriculture, Mr. Pearson.

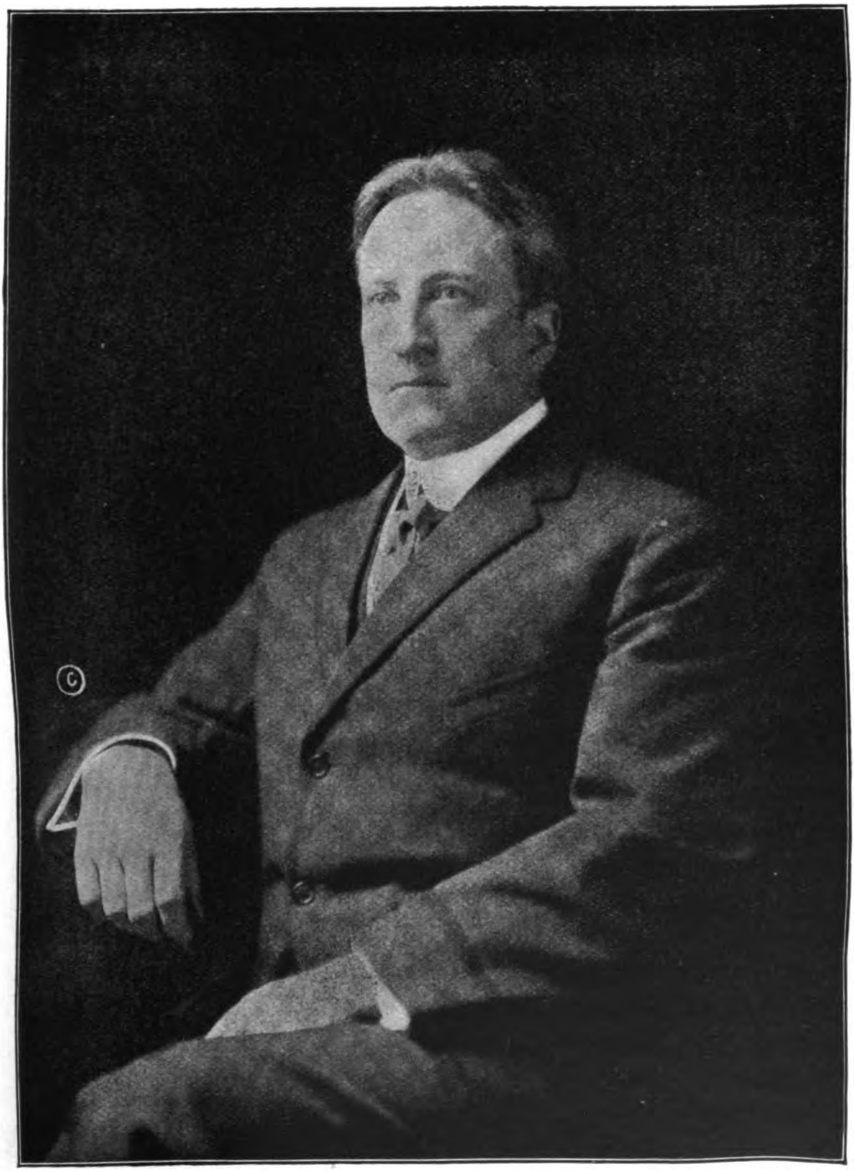

FIG. 44.—JOHN A. DIX, GOVERNOR.

AGRICULTURAL PROGRESS IN NEW YORK WITH SPECIAL REFERENCE TO THE COSTS AND PRICES OF FARM PRODUCTS AND HOW TO BRING ABOUT CLOSER TRADE RELATIONS BETWEEN PRODUCERS AND CONSUMERS

ANNUAL ADDRESS OF THE PRESIDENT

RAYMOND A. PEARSON

Governor Dix and Members of the New York State Agricultural Society: I have the honor to present to you my third annual address as president of your society.

NEW YORK AGRICULTURE IN 1911

The average New York State farmer in 1912 is more prosperous, more progressive, and more hopeful than his predecessor for many years. If he were not more prosperous it is doubtful if he would be either more progressive or more hopeful.

There have been advances in prices received by farmers for their products. These advances have not been as great as most consumers think, nor have they represented as large a proportion of advances paid by consumers as farmers think they should have. But such advances as the farmers have received have helped to put new life into their work. Agriculture, however, is not yet as profitable as it should be. Carefully collected data show that in some large sections of the state as many as one-third of the farms are being operated unprofitably. Yet, generally, in some other sections of the state, and more or less frequently in all agricultural sections, striking examples of farming that is financially successful may be found.

When large industries are unable to pay dividends, it is customary for them to cry out for relief. Agriculture is a notable exception to this rule. In our state farmers saw the value of their property decrease in value 6.3 per cent. from 1880 to 1890, and no protest was heard, and 6.1 per cent. more decrease from 1890 to 1900, when the total value of all farm property was practically $1,070,000,000. But hear this! During the last ten years the census shows the value of farm property to have increased 35.7 per cent. to a total of $1,451,000,000. In the same period the value of implements and machinery on New York State farms increased 49.3 per cent. to a total value of $83,645,000. The value of domestic animals, poultry and bees increased 45.8 per cent. to a total of $183,090,000. These large increases represent increasing confidence in agriculture as an industry.

Agricultural prosperity may be seen now in all parts of the country. Everywhere the agricultural outlook seems to be bright. The depression of a few years ago was due to the rapid development of the West. Secretary Wilson states that, " For many years previous to about 1897, the prices of farm products received by farmers were even less than the cost of production." It is not to be expected that any cause can ever again produce such depression in American agriculture. The Eastern farmers' troubles were the growing pains of a great nation. They were suffered with forbearance and for the good of the nation. Whether this creditable explanation was realized by the sufferers or not, they are nevertheless entitled to credit.

A report recently issued by the National Department of Commerce and Labor shows that the prices of agricultural products increased on an average in 1910, 7.5 per cent. The report shows also that the increases of agricultural prices in a considerably longer period exceeded in many cases 100 per cent. These figures have been seized by some who would show that the increase in the cost of living is due to the increase of prices received by farmers. But a further study of the same report shows that other articles as well have increased in value, among them being building materials, 10.7 per cent. in a single year. Farmers use large quantities of building materials. They also use other articles, such as machinery, household furniture and clothing, all of which advanced in prices. While it is acknowledged that other kinds of products have not generally shown such great advances as 100 per cent. in a period of ten or twenty years, it is easy to see that this large advance in agricultural prices may not be unreasonable. The present prices are being compared with prices that were impossible because they were ruinous.

About fifteen years ago values of agricultural products fell to the bottom: Wheat, 52¾ cents per bushel; corn, 25 cents; oats, 17 cents; hay, $8 per ton. Each bushel of wheat, bringing its 52¾ cents, carried away from the farm 23 cents' worth of plant fertility; each bushel of corn, bringing its 25 cents, carried away 17 cents' worth of plant fertility; each bushel of oats, bringing 17 cents, carried away 10½ cents' worth of plant fertility; and each ton of hay, bringing $8, removed $5 in plant fertility. When these unavoidable charges are deducted it is seen that the balance of the prices received is a trivial one as compared with the cost of labor and taxes. We know of no other industry where prices were so far below actual cost; hence we assume it is reasonable that in the readjustment, agricultural prices should show the largest increase. Lest it be thought that agricultural prices have taken a permanently high level, let me remind you that in the year 1911 farmers in New York State sold large quantities of potatoes at 25 cents per bushel, eggs at 17 cents per dozen, and milk at 2 cents per quart.

In considering the status of our agriculture to-day it is necessary to call attention to the changes in rural population. During the last decade the rural population of New York State increased six-tenths of one per cent., but in thirty-seven of the sixty-one counties it showed a decrease. The ten counties showing the heaviest percentage of decrease of rural population between 1900 and 1910 are:

	PER CENT. DECREASE	TOTAL DECREASE	RURAL POPULATION, 1910
Schenectady	17.9	2,718	12,452
Schuyler	13.1	1,681	11,187
Lewis	12.6	3,166	21,909
Tioga	12.5	2,311	16,136
Hamilton	11.6	574	4,373
Chemung	11.3	1,874	14,754
Schoharie	11.2	2,999	23,855
Cattaraugus	9.9	4,997	45,384
Otsego	9.7	4,067	37,725
Cayuga	9.6	3,451	32,438

Decreases occurred also in other states during this last ten-year census period. The rural population of Ohio fell 1.3 per cent.; Indiana, 5.5 per cent.; Illinois, .5 per cent.; Iowa, 7.2 per cent.

While the decrease is significant and to be regretted, it is not as serious as might appear. Improved machinery is doing much to reduce the need of manual labor upon farms. It must be recognized that the loss in our rural population is merely another one of the readjustments due to the rapid development of our country.

NOTEWORTHY ADVANCES IN NEW YORK AGRICULTURE DURING 1911

The most notable advance is in connection with agricultural instruction in the public schools. In 1896, Superintendent of Public Instruction Skinner asked, "Why can there not be incorporated in our courses of study provisions for teaching something of the principles and philosophy of agriculture?" There are now, in 1912, nineteen schools giving the four-year agricultural course prescribed by the Education Department. Four hundred and forty-two boys and 222 girls, a total of 664 students, are regularly registered in these courses. Two hundred and seventy-six other students take portions of these courses. The nineteen schools are located at Albion, Belleville, Belmont, Gowanda, Hancock, Hannibal, Highland, Little Valley, Lowville, Lyons, Millbrook, Moravia, Newark Valley, North Cohocton and Atlanta, Penn Yan, Perry, Red Creek, Tully, Walton.

Twenty-three other high schools give modified courses in agriculture, with one hundred and ninety-eight registered students, and twelve additional schools are now considering the adoption of the regular four-year agricultural course. This is a magnificent showing, creditable to our State Department of Education, the local school officials, and most encouraging to our agricultural development.

The three secondary schools of agriculture at Canton, Alfred and Morrisville have now placed their work upon a practical basis and they are quietly instructing their scores and hundreds of young men and women along lines which will make them more useful on their farms. A fourth school has been provided for at Cobleskill.

The State College of Agriculture at Cornell University, in the board of trustees of which your president is an ex-officio member, has been provided with new buildings for live stock, horticulture, poultry, home economics, general laboratories and an auditorium. It reports increasing numbers of students and greater activities. On the recommendation of Director Bailey a new plan of government of the college through an agricultural council, composed principally of members of the board of trustees appointed by the Governor and others having agricultural connections, has just been put into operation for the purpose of bringing the affairs of the college nearer to the people of the whole state.

The Bureau of Farmers' Institutes has inaugurated a " follow-up " system which means the personal visits of experts to farmers having real problems, in the solution of which they require expert assistance. In this way new methods which have been talked about for many years are rapidly being put into operation at various points throughout the state, to the benefit of farmers whose premises are visited and to their neighbors as well.

At our annual meeting two years ago, Hon. Dennis McCarthy, Fiscal Supervisor of State Charities, made a statement regarding the farms connected with the state institutions reporting to him, and suggested that these farms might be developed in a manner to increase their own productiveness and serve the interests of better agriculture in their respective localities. Our society favored the suggestion of having an expert to assist in the development of these farms. The work of the expert is now well advanced. It relates to the farms connected with the department of the Fiscal Supervisor, the State Commission in Lunacy and the Superintendent of Prisons. There are forty of these farms, having about twenty thousand acres. Some of them are conducted in a highly creditable manner; others are being developed and it is expected that they will serve as examples of better farming in a way to bring about the wider adoption of better methods in agriculture. As a force for improving our agricultural practices throughout the state these farms have great possibilities.

Another notable event in our agricultural history of 1911 was the New York State exhibit at the American Land and Irrigation Exposition in Madison Square Garden in November. The exhibit was a novelty for our state; it was a surprise to our Western friends and competitors, as well as to people within our own state, and it did much toward dispelling the false notion that to-day the greatest opportunities in agriculture can be found only in the West and South.

Another event in the agricultural history of this state, which should be noted in the records of this society, is the change of ownership and removal from this state of the *Country Gentleman*, an agricultural periodical which has wielded great influence for good in New York State during a long period of years. Its proprietors and editors have been prominent in the affairs of the State Agricultural Society and unselfishly labored to promote its interests.

INTEREST OF ALL PEOPLE IN AGRICULTURE

One feature of our agricultural development which is becoming better and better understood and which ought to be understood by every citizen is that this development is in the interest of the entire public and not of the farmer alone. When questions relating to the development of our agriculture are being considered, it is sometimes said that already enough is being done for the farmer, or that the farmer should be as well able to look out for himself as the man engaged in any other industry. If argument is to be on this line, we would call attention to the numerous aids rendered to other industries. Railroads have been subsidized; manufacturers have been generously aided by the government in an indirect way through tariff laws; patents have been allowed to give exclusive privileges to inventors or to those who are clever enough, or businesslike enough to get the inventors' rights. The financial aid rendered directly or indirectly by our government in such ways as these makes the so-called agricultural aid insignificant by comparison. We do not, however, admit that any such class comparison is fair or reasonable. The development of our agriculture is a national question. For four reasons it directly concerns every citizen:

1. Agriculture is our fundamental industry. Fifty-four per cent. of the people of the United States are classified as rural. One million nine hundred and twenty-eight thousand one hundred and twenty people in New York State, or 21 per cent. of the population, are classified as rural. When such a large number of people are prosperous, then all the other industries feel the good effects. If the practically 2,000,000 rural people in New York State gain, by their own efforts in agriculture, $20,000,000 extra in any year, this means practically $20,000,000 more expended for all kinds of products sold within New York State, the money going direct to the shopkeepers, manufacturers, transportation lines, labor and banks. It is a common saying that in a year of good crops our country enjoys prosperity. How quickly other industries feel the effect of agricultural prosperity. An

increase of only one bushel of grain per acre, or its equivalent, on all improved agricultural land in the United States would require 12,500 extra trains of 50 cars each for transportation. The difference in yields between a good year and a poor year in agriculture, if marked and if uniform throughout the entire country, would represent a difference of 100,000 trains for transporting the crops. It is easy to imagine what this would mean to business, the stimulus of the increase being transmitted from one industry to another until it had covered the entire country and affected practically every person.

2. Consumption is overtaking production. Few of our people realize what a serious matter this is. We have been great exporters of food products, but those who think this is the case to-day are ignorant of the changes that are taking place. At the present rate of increase of population and the present rate of increase of crop production, we shall within a few years be obliged to import food products, and it will be a calamity to this country if such a condition comes to pass. It is only our surplus that is exported. Notice how this is decreasing:

EXPORTS OF FOOD PRODUCTS FROM THE UNITED STATES

	AVERAGE NUMBER 1901–1905	AVERAGE NUMBER 1906–1910	YEAR OF LARGEST RECENT EXPORTATION	NUMBER	EXPORTED NUMBER IN 1910
Live cattle	483,099	340,694	1904	593,409	139,430
Sheep	280,656	98,241	1896	491,565	44,517
Swine	17,111	27,463	1906	59,170	4,410
Fresh beef (lb.)	288,887,001	189,908,434	1901	44,171,679	1,040,278
Fresh pork (lb.)	25,889,295	10,376,455	1902	351,748,333	75,729,655
Wheat (bu.)	89,944,552	65,103,378	1902	154,856,102	46,679,876
Corn (bu.)	84,790,788	65,224,190	1900	209,348,284	36,802,374
Oats (bu.)	11,672,956	10,938,678	1898	69,130,288	1,685,474

Already we are importing some food products. In 1909, 8,383,966 bushels of potatoes were brought into the United States, with duty of twenty-five cents paid on each bushel. In the same year we imported 3,355,405 bushels of beans and dried peas, and 6,666,989 bushels of oats. This year we are again importing large quantities of potatoes.

3. Some of the older and present methods of agriculture are destructive. It has been pointed out many times that our system of farming is like a system of mining. We extract fertility of the soil by means of crops and finally send this fertility to the ocean through our sewers. Methods of agriculture must be changed so

that the valuable constituents that are being carried away may be replaced.

4. Farmers to-day have to contend with new pests and diseases of plants and animals that were not known a few years ago. The San José scale, bovine tuberculosis, pear blight, collar rot, potato bug and codling moth are illustrations of many that have been introduced in recent years and each needs its own particular treatment to prevent it from playing havoc with its host. To-day, also, we see the threatened danger from brown-tail and gipsy moths.

These four reasons are sufficient to show the necessity for developing the newest and best methods in our agriculture. It is a necessity that rests upon the whole people. But great care must be taken lest those who are not well posted upon the agricultural situation and its peculiar requirements rush in with impractical remedies, thus bringing discredit to the industry and setting back the advances that all desire to see made. Some commercial bodies made up of city men have taken a most commendable interest in agricultural development. They freely acknowledge that agricultural success underlies their own success. Their efforts in behalf of agriculture will be most valuable when they take into their councils men who have made a life study of agriculture and its needs. Without such expert assistance they may easily adopt unwise measures.

One suggestion which has been extensively advocated is that farms should be purchased by the government, one in every county, and that these should be conducted as models at government expense. As well might one build a house and call it a model for all houses. It might be a model in construction while being constructed and it might be a model in arrangement and furnishing when completed, but it never would be a model in more than a few phases of the whole subject, and then only a model for a limited number of houses. The orchard on the so-called model farm would serve only to illustrate the care of an orchard of its size and age and particular variety or varieties on its particular kind of land, in its particular kind of location. It could not demonstrate twenty-five per cent. of the serious orchard problems, even in the immediate locality. If it is young, it cannot be a model for the care and treatment of an old orchard; if it is diseased, it cannot be a model for a healthy orchard. The best models of all kinds of farming are those to be found on the farms of the best farmers, and fortunately we in New York State have many thousands of these models free to all who would look upon them. Let us devise a method to draw attention to them.

THE WORK OF OUR SOCIETY LAST YEAR

We have reason to feel gratified by the results following our last two meetings. Permanent committees have been diligently at work and they now bring to us reports of labors completed and in a manner to benefit agriculture for a long time to come.

The Publicity Committee, undertaking to give out correct information concerning agriculture in New York, practically had charge of the great exhibit of this state at the Land Show in Madison Square Garden last November, which already has been referred to. The Publicity Committee could render no greater service than to publish far and wide interesting and convincing items of information regarding agriculture in New York State. The whole world has heard of the wonders of a little fruit district in the West, containing only about fifty square miles. How much greater are the wonders of the fruit industry in New York State, or even in some counties of our state, and how little does the world or the people in our own state know about them. We would like to have everyone know that according to the last complete census figures, which are now ten years old, Monroe County produced more apples than any other county in New York State or in the United States; Niagara County stood second, Wayne third and Orleans fourth. The four leading apple counties in the United States all located in New York. And we would like to have the world know that St. Lawrence County has more dairy cows than any other county in the United States, with Delaware second, Oneida third, Jefferson fourth, Cattaraugus fifth. The five greatest dairy counties in the United States all in New York State.

We would like to have everyone know that according to the 1910 census the old farms of New York, which have been libeled by those who would make people think we have farmed our land to the limit, produced an average of 1.4 tons of hay and forage per acre, as compared with the average of 1.3 in Illinois, Indiana, and Michigan; they produced an average of 23 bushels of wheat per acre, as compared with 17 in Illinois, 16 in Indiana, 15 in Iowa, 13 in Kansas, 20 in Michigan, 14 in North Dakota; they produced an average of 27 bushels of oats per acre, as compared with 30 in Indiana, 28 in Iowa, 25 in Kansas, 24 in Maryland, 23 in Missouri; an average of 123 bushels of potatoes per acre, as compared with 87 in Illinois and Iowa, 90 in Indiana, 73 in Kansas, 88 in Maryland, 105 in Michigan, 121 in Massachusetts, 110 in New Jersey; and our average of corn production was 35 bushels per acre, as compared with 39 in Illinois, 37 in Iowa, 19 in Kansas, 33 in Michigan, 27 in Missouri and only 15 in the whole United States.

We want all to know, and especially the farmers in this state, that New York possesses in one place or another the chief agricultural attractions of other states, added to our unexcelled markets, our great transportation systems, our exceptional educational facilities, and a state agricultural law protecting farmers against frauds of almost all kinds. If the farmers of New York State did but know these facts we would not occasionally hear of them leaving for Canada where they think agricultural opportunities may be better. It has long been said that " distance lends enchantment," and perhaps there is no other explanation of the fact that clever men can come into our state and sell to our farmers for three hundred to five hundred dollars per acre land in the far West or the far South without improvements, without neighbors, without schools, without churches, without markets, without those things that men most want and immediately set about to procure when they establish themselves in the lonely places. All these advantages are everywhere in New York State, within easy reach of many farms that can be purchased at from fifty to one hundred dollars per acre and will at once produce as large crops as the land in the distant West, now covered by sage brush, or in the far South, now covered by tangled weeds, and for sale at three to five times the cost of the New York land. Our publicity committee if it has funds, can render a valued service to the state in simply making known the truth about our state to our own people and incidentally to such others as may wish to have it.

The Committee on Agricultural Education, after great labor, brings to you a law establishing a State Agricultural Education Advisory Board. This was greatly needed to avoid duplications and possible conflicts that might arise between the various state agencies working along parallel lines. I think this committee should be maintained because new problems in connection with our educational efforts will arise from time to time. George Washington's statement, " I know of no pursuit in which more real and important services can be rendered to any country than by improving its agriculture " was never more true or appropriate than to-day. The improvement must come mostly through education. It would be well for us to consider the inauguration in this state of the plan of having agricultural experts stationed at various points throughout the state — which would amount merely to the extension of such efforts now in operation on a small scale. Without in any way reducing our activities along experimental lines, but rather strengthening them, we should take steps to secure the more rapid adoption of best methods in agriculture. This year, if the information available could be applied over our state, the value of our agricultural production would be increased from fifty to one hundred millions of dollars. Our land is not worn out. It is wonderful land. Professor I. P. Roberts, a former president of this society, and one who is fondly remembered by farmers throughout this state as one of those who worked hardest for our agricultural advancement when conditions were hardest to contend with, recently wrote me from his home in California, saying that he often thought that if he could begin life anew, he would go into agriculture and he would settle on the strong hill lands of old New York. Our land is not worn out, but some of our methods are.

The Committee on the Development of Agricultural Resources has been carefully studying its work and brings a valuable report. This committee should be continued, in my opinion, and requested to give special attention to the loss of our greatest agricultural resource, soil fertility, through sewage. Last year I brought this question to your attention. It was stated that a conservative estimate placed the value of the plant food lost annually from the entire state at twenty million dollars per year; the value may be much larger. Obviously our hillsides and valleys cannot indefinitely continue to lose this great store of fertility without becoming depleted. Our state would do well to set its experts at work upon this problem. The subject is being studied abroad and more or less successful efforts are being made to save the fertilizing constituents of sewage.

At Birmingham, England, with its population of nearly one million, there is a sewage farm. The methods in vogue have not been found profitable from a commercial standpoint, but a large advantage is claimed in that this method of disposing of the sewage prevents the pollution of streams. At Liverpool, England, about 10 per cent. of the sewage is disposed of on two sewage farms. At this place also the method appears not to be economical. At Manchester, England, the sewage is treated in precipitation tanks and is filtered before being discharged into a stream. Some of the solid material is pressed into cakes and disposed of as fertilizer, but there is little demand for this. Other solid material taken from the so-called bacteria beds is in great demand for fertilizing purposes. At Glasgow, Scotland, certain chemicals are added to the sewage to cause precipitation. The crude sludge precipitated is pressed and sold as fertilizer. At Berlin, Germany, the sewage is pumped to sewage farms located a few miles distant. They have an area of about forty thousand acres, part of the land being leased and the remainder cultivated by the municipal authorities. At Hamburg, Germany, the sewage is discharged into the river Elbe. A certain part of the solid material, however, is collected at the mouth of the sewer, whence it is carried in barges to low land belonging to the government. At Christiania, Norway, all toilet waste is used for fertilizing purposes. At Paris, France, sewage is pumped through three stations, certain constituents are precipitated and the residue is used for fertilizing four large municipal farms, which are kept in a high state of fertility for intensive cultivation. Plans are being formulated at Amsterdam, Netherlands, for using sewage for fertilizing purposes. At Prague, Austria, a part of the sewage is used for fertilizing land.

This is a subject which well may be looked upon also from the standpoint of the protection of the purity of our water supply. Enormous expenditures are being incurred by different cities for the purpose of disposing of sewage in a manner to protect the water supply. It is announced that the city of Milwaukee, Wisconsin, has undertaken an expenditure of eight million dollars for this purpose.

The subject needs to be studied by chemists and engineers and it is believed that if the small sum of ten or twelve thousand dollars could be made available for this purpose, some investigations could be conducted which might lead to the saving in New York State of a considerable part of the many millions of dollars' worth of plant food now being wasted.

Might not the Committee on the Development of Agricultural Resources consider the development of still another comparatively inactive resource, the interest of ourselves in the improvement of agriculture in our own localities? Would it, perhaps, be well to have an agricultural committee or council organized in each county, composed of officers of granges and all other agricultural organizations, rural school teachers and superintendents, editors of rural papers and possibly a few persons to be selected by these ex-officio members. For the past two years conferences constituted somewhat like this have been meeting to assist the Department of Agriculture to locate institutes and determine programs. Such a council as proposed, having a permanent organization, could render great service in a county. It could assist in planning educational meetings or extension schools, in improving the fairs, arouse interest in the rural schools, give attention to the improvement of roads, cooperate with the state in finding suitable purchasers for farms offered for sale. The council could help to find instances of model farming and draw attention to them, and it could cooperate with and greatly aid an agricultural expert stationed in the county.

The Committee on Marketing, Transportation and Grievances will report the establishment of a food investigating commission, with large powers to ascertain the facts regarding prices of agricultural products, methods of marketing and improvements that need to be made. The chairman of this committee is a member of the food investigating commission by the Governor's appointment.

The praiseworthy results of the work of our committees could not have been obtained except with the aid of our *Legislative Committee,* the favorable action of the legislature and the consent of Governor Dix, who, a year ago at our meeting, expressed his deep interest in the society and its various activities.

COSTS AND PRICES OF FARM PRODUCTS AND HOW TO BRING ABOUT CLOSER TRADE RELATIONS BETWEEN PRODUCERS AND CONSUMERS

The general subject for this meeting is costs and prices of farm products and how to bring about closer trade relations between producers and consumers.

Hardly any subject is more discussed. The cost of living has increased and, with other kinds of marketable articles, food products have increased in price. Who is to blame? The retailer blames the wholesaler. The wholesaler blames the farmer. The farmer blames the commission man. The railroads are blamed and so are the express companies. Seldom do we hear that the consumer is to blame. The responsibility for increase of prices belongs somewhere. The whole subject is badly mixed up and needs to be untangled.

We hear of farmers who have sent their products to the distant market and have been unable to make a collection. Of course, this is because the shipment was made to an irresponsible concern. But how is the farmer with ten or one hundred dollars' worth of produce to know definitely whether a particular concern is reliable? Frequently a trial shipment is made to ascertain if returns are good and prompt, and, getting favorable information in this way, a second and larger shipment is made, when there are no returns. There are always unscrupulous persons soliciting shipments, sending attractive statements to shippers and claiming good references, who are scoundrels pure and simple. They misrepresent themselves through the United States mails. There are laws against such frauds, but the farmer is not in a position to put these laws in motion. Nor is it always practicable for him to secure bank references and then wait for a statement from the bank.

A strong demand has arisen to require all commission concerns to be licensed and some would go so far as to require them to be bonded. These remedies would be helpful. But whether these restrictions are secured or not, or until they or better restrictions are put into operation, it would seem that provision might be made whereby the State Department of Agriculture or some other state department should ascertain the commercial standing of any person or concern soliciting shipments on a commission basis or direct sale, and report the same when requested to do so by an intending shipper. This would seem to be in harmony with the stand taken by the government in reference to examining and reporting upon the reliability of banks.

During the past year the State Department of Agriculture has made an interesting study of prices received by farmers in different parts of the state for different kinds of farm products, and prices paid by consumers in different parts of the state for these same kinds of farm products. We have received monthly reports from about fifty farmers and the same number of residents of towns and small cities scattered throughout twenty-eight counties. Tabulation of these reports reveals two facts very clearly: First, that there is a great variation in prices received by farmers for any particular kind of farm product being sold in different parts of the state at the same time. For example, last December a farmer in Franklin County reported selling eggs at 57 cents per dozen; farmers in Tioga County, at 50 cents; numerous farmers throughout the state sold eggs at 40 cents, one of them residing in the same town as the farmer who was selling at 57 cents. The price received by farmers for live fowls in the same month varied from 8 cents to 14 cents per pound. Potatoes varied from 75 cents to $1.25 per bushel. Oats varied from 45 cents to 60 cents, there being many sales at these and intermediate prices. We were not able to tell whether the highest prices were in all cases due to direct sales to consumers. There are, however, enough sales at both highest and lowest prices to show that they are not uncommon.

The second fact revealed by this inquiry is that the margin between prices received by farmers and paid by consumers differs widely for different kinds of products. Last December consumers reported purchasing potatoes at prices from 80 cents to $1.40 per bushel, with most of the prices an even $1. The reports show that farmers received from 3 cents to 4 cents per quart for milk in December, and consumers in towns and small cities paid 6 cents to 9 cents. Farmers received in December from 7 cents to 8½ cents per pound for hogs dressed, while consumers paid for hams 16 cents to 23 cents, for bacon 17 cents to 25 cents, and for pork chops 14 cents to 18 cents. It is proposed later to publish deductions from this investigation.

Various kinds of efforts are being made by consumers and producers in connection with readjusting prices of farm products, and many theories are being advanced. The consumer looks at the question mainly from one standpoint. He wants to buy cheaper. Incidentally, he would be glad to get better quality if that were possible, which it probably is not.

The principal methods by which consumers are attempting to reduce the cost of food are:

1. By purchasing goods in larger quantity. The purchase in large enough quantity to secure wholesale rates is not uncommon. It seems to be such a sensible proposition to buy a bushel or a barrel of potatoes instead of a half peck, that we wonder the practice has not become more general. We shall hear at this annual meeting various plans for effecting savings by purchasing increased quantities. The chief difficulty appears to be lack of storage room in residences. Cubic space seems to be so valuable that an apartment, or sometimes a house, cannot be made with space sufficient to accommodate an additional barrel or box or two. Some families lose more in a month through the payment of exorbitant rates for food products in vest pocket quantities than they would have to pay in rent for additional space sufficient to enable them to buy food supplies in large enough quantities to last a few days or weeks. A resident of Albany informs me that the excess which he pays for apples and potatoes and certain other products purchased in small quantities, over what he could buy them for by the barrel, amounts in one year to more than it would cost to construct a brick wall in the cellar of his house to provide a special storage room for food products. Two heaters in this cellar make the temperature too high to permit of keeping vegetables and fruit for any length of time.

2. The cost of food supplies may be reduced by the use of cold storage for butter and eggs. A man, living well in one of our cities and having to economize in all purchases, bought from a creamery last summer 120 pounds of butter put up in small packages at 25 cents per pound. Express on the shipment amounted to 75 cents. Cold storage charges were one-eighth cent per pound per month. The butter, therefore, cost an average of less than 26 cents per pound. This butter was used throughout the winter when butter of the same quality was being sold by the

half-pound or pound at the rate of 38 cents to 39 cents a pound. Here was a saving of nearly 13 cents per pound on butter.

3. Frequently consumers may effect considerable saving by making better selection of their foods so as to secure more for the amount expended. Experts will discuss this phase of the subject during our sessions.

4. Often methods of cooking may be so improved as to enable the use of less expensive foods, for example, meats, with equally good results. This subject also will be discussed by experts.

The producer looks at the subject also from one standpoint. He wants more profit. It is easy to show that he deserves it. We should remember that conditions of farming have changed and now plant food or fertility of the soil, which is one of the chief requirements of the crop, is not as abundant as it once was in our virgin country when its cost did not need to be considered. Now we have to buy plant fertility, and in the last census year the farmers of New York paid for commercial fertilizers $7,142,265. That they are paying more and more year by year is well shown by comparison with the amount paid in the census reported in 1900, when the amount was $4,493,050. The amount paid for fertilizers increased 59 per cent. in ten years. The farmer must now consider the cost of all materials and labor going into his products with the same care that the manufacturer of stoves or shoes must use. The farmer wants more profit. He can secure it in three different ways:

1. By selling his products at a higher price. This would mean more cost to the consumers and probably the increase of price could not be brought about without combinations which would be illegal. To a limited extent farmers may secure higher prices by their individual efforts in the interest of better quality or greater attractiveness.

2. They may secure more profit by producing more cheaply. This means greater economy in production, and this means a better understanding of the subject, and this means more agricultural education. By means of agricultural education the cost of producing farm products is being reduced. Such efforts need to be extended. In some instances a desirable cheapening in the cost of production includes a reduction of freight rates. I think that the railroads are blamed more than they deserve in this connec-

tion. Yet there are some glaring instances where freight rates operate seriously against the farmer. For example, a certain railroad serving exclusively an important section of the state carries potatoes from a shipping center in that section to another point 52 miles distant at the rate of 14 cents per hundred pounds. This same railroad carries potatoes from the opposite direction to the same market, a distance of 43 miles, and receives the shipment from another railroad which has carried it 238 miles, the rate for the entire 281 miles being 19 cents per hundred pounds. The farmers who must pay 14 cents for shipping their potatoes about one-fifth as far as other farmers who pay 19 cents may have a just grievance against the railroad.

3. The third method open to producers for increasing their profit is to take for themselves part of the profit or compensation now going to the middleman. Much is said against the middleman. But probably he is necessary. Probably also he is far more numerous than is necessary.

If farmers place themselves entirely at the mercy of any other group of persons, they must expect to have that other group take all the profit that it can extract. Many times the point has been made that a cooperative creamery can make butter in a community more cheaply and more agreeably for the farmers than to have it done on their separate farms. Many a creamery of this kind has been established. Sooner or later, for one reason or another, it has become a proprietary concern. At first the new proprietor may do as well for the farmers as they could do in running their own plant. Gradually their equipment for making butter at home falls to pieces and ways of doing the work are forgotten, and then the new proprietor practically has the dairymen in his vicinity at his mercy. If he becomes too unreasonable another proprietor may appear and do a little better temporarily or permanently. The best protection for the farmer against such advantages being taken by others is to either be prepared to handle his own individual product as he did many years ago, or to dispose of it through an entirely different channel, should he so desire.

In the disposition of pork also we have come to depend largely upon the middleman. Comparatively little pork is now smoked and salted on the farm. When killed it is placed on the market, whether glutted or not, and the market holds it for profits which are likely to be far greater than the profit derived by the farmer. Many a farmer this winter has sold his pork for from 6 cents to 7 cents per pound dressed, and large portions of that pork will be retailed at more than 20 cents per pound and most of the balance for more than 12 cents per pound, after smoking or salting, which the farmer could well do.

Again, the farmer is dependent on the middleman when it comes to storing his potatoes or fruit. Comparatively few have arrangements for holding these products.

For the purpose of getting accurate information as to what can be accomplished in the way of direct trade between producer and consumer, the State Department of Agriculture has sent inquiries to several hundred farmers and several hundred residents of our larger towns and cities. In each case the first question asked was if the recipient had had recent experience in direct trade between farmer and consumer. The second was for names of products handled. The third, if this direct trade was satisfactory in a financial way. Opinions were asked as to whether such trade could be more generally developed and what are the difficulties. Replies were received from 292 farmers, of whom 217, or about three-fourths of the total number, had had experience in selling direct to the consumer. Replies came also from 344 consumers, 231 of whom had during the last few years made purchases directly from farmers. Of these 231, 54 live in small towns or cities, 50 in Syracuse, 31 in New York City, 22 in Buffalo, 20 in Schenectady, 19 in Albany and 16 in Troy. Articles most commonly traded in are potatoes, apples, eggs, butter, miscellaneous vegetables, poultry, pork and milk. In about 75 per cent. of the cases delivery was made by the farmer's team, in about 12 per cent. by express, 8 per cent. by freight, and the balance not reported. One hundred and fifty-eight of the 217 farmers reported that they receive better returns by means of these direct sales; 24 made negative reports, and 23 expressed themselves as in doubt. These direct transactions are considered profitable by about three out of every four farmers who reported. The advantage as reported by farmers varied considerably. On potatoes it was from 5 cents to 50 cents per bushel; in the sale of apples the same gain was reported; the gain on eggs was from 2 cents to 15 cents per dozen, and on butter from 1 cent to 10 cents per pound.

One hundred and twenty-one residents of cities reported a saving by their direct purchases; 36 claimed no saving, and 35 were in doubt. On potatoes the consumers saved from 10 cents to 60 cents a bushel; on apples, 16 cents to 60 cents; eggs, 1 cent to 15 cents per dozen, and butter, 1 cent to 15 cents per pound. Some consumers who were doubtful as to the money advantage said that the farmers' goods were desirable because they were superior in quality. In fact, 195 consumers reported the quality satisfactory, and 23 of these were enthusiastic about it; 19 were doubtful and 4 had been disappointed.

We asked the farmers if they had difficulty in making collections for their deliveries to consumers. One hundred and seventy-one reported no difficulty, 40 reported more or less trouble, and 10 of these were emphatic in their complaint. It was noted that many of the farmers took the trouble to report that consumers are as reliable in the matter of payments as are wholesalers, and perhaps more so. The farmers' replies showed also that some of them realize the importance of cash transactions. Both producers and consumers were asked as to their opinion concerning the feasibility of direct trade for the purpose of each profiting by the elimination of the middleman. One hundred and thirty-eight farmers answered in favor of direct trade, 21 against it and 21 were doubtful. One hundred and forty-two consumers were in favor of direct trade, 22 could see no advantage in it, and 30 were doubtful.

In answer to the question how best might this advantage be realized, fifty-two farmers suggested sales through a farmers' organization. This unanimity of opinion is very significant. Twenty-seven farmers suggested sales in cities through a responsible representative of the farmers who would be located in the cities. Ten farmers suggested direct trading between individual farmers and consumers. Three suggested farmers availing themselves of the public markets. Other suggestions included the necessity of farmers being better posted on values, the need of parcels post and consumers' organizations, and better transportation.

The consumers made numerous suggestions as to effecting direct trade relations and some replies showed they had been carefully prepared by men and women who had given careful thought to the matter. The consumers who replied to us include many professional people. Thirty-four suggested that consumers should buy in the public market on market days; 24 suggested buying through consumers' organizations having a purchasing agent; 20, that consumers should establish direct relations with individual farmers; 18 recommended purchase of larger quantities of supplies at one time; 12 advised farmers' organizations; 7 said that farmers should advertise their products by letters or postal cards; 6 would abolish hucksters' licenses; 3 suggested parcels post; and 2 suggested a farmers' agent located in the city.

Farmers were asked if consumers generally could be depended upon to order intelligently. One hundred and forty-eight said "yes," 30 said "no," and 25 were doubtful, some of these latter adding that with a little training they could do so.

The consumers were asked if farmers generally could be depended upon to furnish quality and quantity ordered. One hundred and sixty said "yes," 41, "no," 18 were in doubt, and numerous consumers added that the farmers are as reliable as storekeepers and other dealers.

Both producers and consumers were asked what in their opinions are the chief objections or difficulties that will serve to prevent more direct trading. Farmers' replies after tabulation show the following: 32 said the distance of the farmer from the market; 27 said the high cost of transportation; 26 said the consumers purchased in too small quantities; 21 complained that consumers are slow to pay and want too much credit; 20 mentioned the lack of organization among farmers; 17, the lack of time on the part of farmers; 12, the scarcity of reliable farm help; 9, the inability of farmers to get in touch with consumers; 8, ignorance of farmers. Among the other difficulties mentioned are: That consumers are too particular about price; they lack storage facilities; the farmers lack confidence among themselves; the absence of parcels post facilities; the lack of confidence of consumer in the farmer; dishonesty of consumers; farmers' dislike to peddle; farmers' produce not intelligently graded; restrictive laws of cities; combinations of dealers; credit systems of merchants; farmers' products not available throughout the year; farmers' lack of initiative; poor roads; consumers' desire for immediate delivery; farmers' need of money when crops are ready for the market; farmers' lack of storage facilities; high cost of delivery.

The consumers reported their opinions of difficulties as follows: 31 mentioned faulty and expensive transportation, including poor roads and lack of parcels post; 21 referred to small quantities purchased by consumers; 20, the irregular delivery service of farmers; 12, not in easy touch with farmers; 12 claimed that farmers are dishonest; 10, that farmers prefer to sell in large lots; 10, that farmers charge retail prices; 10, that farmers are too busy; 10, that market and hucksters' licenses interfere. Other difficulties include: Consumers' lack of capital; control of markets by large dealers; farmers' high cost of distribution; farmers' lack of organization and business ability; consumers' lack of interest; collusion between city officials and middlemen; consumers' inability to judge quality; farmers' products ungraded.

These reports show that direct trade between farmers and consumers is being carried on to a considerable extent and, in general, that it is advantageous to producer and consumer alike, both as to quality and prices. That it is not more common is doubtless due to the difficulties that these correspondents have enumerated.

Obviously one of the chief requirements for successful direct trade between producer and consumer is confidence. Confidence underlies all successful business. Consumers should have confidence that farmers will deliver what is ordered or what they claim to be delivering. Farmers should have confidence that consumers will accept what they have ordered and pay for it, and there should be no doubt in reference to what is mentioned when referring to quality of goods. Terms defining quality, which means the size and uniformity of an apple as well as its flavor, should be as definite as are terms defining measurement. It should be as much a violation of the law for a person selling food products to knowingly misrepresent quality as it now is to misrepresent constituents. It is as great an offense against the purchaser to pack gnarly, little Baldwin apples in the middle of a barrel with good apples at each end and call that barrel of apples No. 1, or first grade, as it would be to sell a barrel of inferior mixed apples as Baldwins, and the law should so provide. With grades properly defined and protected, trade between producers and consumers would be greatly facilitated, to the advantage of both. What we need is plain, old-fashioned honesty and plenty of it, on the part of both the producers and consumers. Then we will have confidence and trading will become an easy matter.

The more the subject is studied from the standpoint of the farmer, the more clear does it become that he should cooperate with his neighbors in order to overcome the objections raised on account of small stocks and relatively expensive methods. A number of farmers working together can well afford to employ a competent person to do their grading and selling for them. Here again we need confidence. Already cooperative efforts are being developed with some success in different parts of this state and the United States, but the greatest advance along this line has been made in European countries. It would be to the advantage of our farmers if we could make an expert study of the methods which have proved successful in the older European countries, with a view to applying this study to our own conditions. It seems as though the development of this great idea for New York farmers needs only the further information of what has been done elsewhere to more widely establish the advantages of cooperation here.

OUR FUTURE

This society is one of the oldest agricultural organizations in the United States. In its early days it did much to advance the agricultural interests of New York. Gradually the functions which it was performing became of such importance and magnitude that special institutions were created for continuing and enlarging them. When it had been relieved of its usual burdens, this society became inactive and remained so for a period of several years. During the past three years we have come to realize that there is need for our activity at this time.

Recently the society has accomplished much through its annual meetings and the continual work of its standing committees. To-night we see again that there are difficult problems before the farmer which can best be solved through the aid of such an organization. We are now coming to realize that our greatest work lies ahead of us and not behind. The biggest agricultural problems of this country are in the future.

This society includes in its regular and ex-officio membership representatives of all agricultural interests in the state. It is a farmers' organization; it belongs to no man, nor to any group of men, nor to any institution, but to all the farmers in the state. It should preserve its strictly agricultural character by taking into its membership only those persons who are actually engaged in agriculture and others only in exceptional cases, when it is known that they are unselfishly interested in agriculture.

This organization should keep strictly out of politics, but it should express itself, through proper channels, to the executive and legislative branches of our government, to advise them, as they doubtless would wish the advice, upon agricultural questions of interest and importance to the state as a whole. When partisan politics or petty politics, or personal politics appear in our meetings, the introduction should be resented in no uncertain way. If selfish interests of those seeking their own advancement present themselves in our meetings, they should be excluded forthwith. Only so long as we keep ourselves free from entanglements of this kind and preserve unsullied our determination to think and act in the interest of agriculture as a whole, will our organization serve its members and the state as it ought.

There are included in the report of our last meeting the names of 923 life members and 39 annual members. Of the 923 life members a considerable number have shown by their indifference that they no longer have an interest in the society. A large number of the life members live in large cities: 220 in Syracuse; 51 in Albany; 42 in New York and Brooklyn; 10 in Rochester; 9 in Buffalo; 8 in Elmira and 5 in Utica. From letters received by the officers of the society from a few of these persons, it would seem better if their membership were discontinued. After laboring patiently and without success to arouse the interest of some of our life members, even to the point where they would respond on a self-addressed and stamped postal card, the officers of the society would be pleased if life membership could be construed to mean not during the life of the member but during the life of his or her interest in the organization. If this were possible a most desirable weeding out of members whose interest is dead could occur.

If it is permissible under our constitution, I strongly recommend that the Executive Committee, or a special committee on membership to be appointed, be directed to remove from our list of members all names of persons who through their communications, or lack of communications, show that they have no interest in the aims or purposes of the society. I think this would involve not more than ten per cent. of the members, but ten per cent. dead weight is too much for a live organization to carry. The same committee also should consider the establishment of a class of foundation members, consisting of persons eligible to membership in the society and who pay a life membership fee of one hundred dollars. It should be required that all such membership fees be invested in safe securities and only the income used. This society ought to have a fund of not less than twenty thousand dollars to provide for some of the most urgent routine expenses.

Not a few of our leading farmers believe that a great annual gathering of farmers in Albany each year at this time would do much toward stimulating and promoting the advancement of our agriculture. This week while we are in session, the State Breeders' Association and several breeders' societies also are in session and hold some joint meetings with us where questions of interest to all will be considered. The New York State Association of County Agricultural Societies and the Union Agricultural Societies of the State of New York hold their annual meetings at the close of our meeting and many of their members will be here to attend a joint session where subjects will be considered that are interesting alike to their members and to ours.

Agriculture has been subdivided into many specialties and almost every one now has its organization. These organizations meet at various places, and if it happens that one person is interested in several specialties, frequently he must journey to different places if he would attend the annual gatherings. This Agricultural Society, with interests broader than any other, might form the nucleus for a great annual agricultural convention with numerous agricultural organizations meeting at the same place and during the same days. Special separate sessions can be held for questions of technical or limited interest and joint sessions for questions of general interest such as are being considered at all of our agricultural gatherings. By such a combination we can greatly strengthen our program through securing the best speakers in the country, and we believe that such a combination would not detract in any way from the welfare of any organization. On the contrary, each separate organization would be strengthened. Unquestionably the united meetings would accommodate many persons. Besides the organizations cooperating with us this year, seventy-five granges and other agricultural societies have appointed official delegates to attend our sessions and take home with them reports of what is done here. These delegates represent organizations in thirty-one different counties.

The American Association for the Advancement of Science is an organization of broad scientific interests. Its membership is made up largely of persons who have also special interests and belong to specialized organizations. About thirty organizations of more or less special or technical interests are now affiliated with the American Association and hold their meetings in the same city on the same days. Several years' trial seems to show that this kind of cooperation is beneficial to all concerned.

THE PROGRAM FOR THIS MEETING

The program committee appointed by your board of management is to be congratulated upon the program that is before you. Such an array of speakers probably has never before appeared at the meeting of an agricultural organization in this state, or perhaps in any state. Farmers themselves, who are actually contending with farmers' problems day by day, are here to speak to us. They will give us their records upon the cost of producing various crops. Many who are expert along these lines are present to take part in discussions. We hope to accomplish something worth while in the development of the subject that runs through all our sessions, namely, costs and prices of farm products and how to bring about closer trade relations between producers and consumers. This subject was suggested by Governor Dix in his address before us a year ago, when he said, "If means can be devised whereby the producer can obtain a higher rate and the consumer pay a less price, through the elimination of the tremendous profits which now go to the middleman, both the producer and the consumer will be immensely benefited."

The Governor honors us by serving as our presiding officer tonight and thus he indicates the interest that should be felt in agricultural progress by all those who are charged with the duty of enforcing the laws of the state and promoting the welfare of the citizens. Many members of the legislature, by their attendance at our sessions, will further illustrate this important obligation. Lieutenant-Governor Conway, President of the State Fair Commission, has consented to act as presiding officer at our session to-morrow night, and Speaker Merritt, on Thursday afternoon. Hon. William J. Gaynor, Mayor of New York City, and Senator Wagner, President pro tem. of the Senate, will address us Wednesday evening. Prominent speakers from outside the state include: Professor C. S. Plumb, of Ohio State University; Hon. J. A. Ruddick, Dairy and Cold Storage Commissioner, Ottawa, Canada; Hon. Samuel Lewis Shank, Mayor of Indianapolis; W. A. Hunter, secretary of the Boston Cooperative Milk Producers' Company, Worcester, Mass.; W. H. Ingling, manager of the Monmouth County Farmers' Exchange, Freehold, N. J.; Hon. A. P. Sandles, Secretary of the Board of Agriculture, Columbus, Ohio; Professor F. C. Minkler, of the State Agricultural College, New Brunswick, N. J.

I invite your special attention to the program for Thursday evening, which will be a homemakers' session in cooperation with the Woman's Club of Albany, the Albany Mothers' Club, and the Central Christian Mothers' Union. Mrs. John A. Dix has graciously consented to act as patroness for this session. Many homemakers have felt the embarrassment of increased prices of food products and not a few innocently have laid the blame upon the farmers. For this reason, as well as from the fact that all farmers are homemakers, it seemed wise to the program committee to arrange this special session, with the view of showing how homemakers may reduce the cost of living, even under present conditions. The speakers for the evening are splendidly qualified to give instruction upon this subject and the session probably will be one of the largest attended and most popular of our annual meeting.

Throughout our sessions at this meeting let us constantly endeavor to look upon all subjects in the broadest, fairest way, so that we may come to right conclusions, conclusions which may not prevail at once but will in time, because they are right, and right must prevail.

GOVERNOR DIX: I am sure you will agree with me that we have all been instructed and very much interested in the report of the Commissioner. I have been extremely anxious to hear it, because I have followed his work this past year with a great deal of pleasure and profit.

In his reference to the development of agriculture as national, I wish to say that within the borders of this state we have almost all the conditions that prevail in the nation. This state has been styled and now bears the honor of the "Empire State." If that name is to be maintained and passed on to future generations, there must be cooperation and activity displayed in every department, especially in the Department of Agriculture.

To the statement that the Commissioner made on soil conditions, I wish to add a few remarks. Fertility of soil is utility of soil. Soil suffers from use, from disuse and from abuse. There are a number of ingredients or elements in the soil of this state, and every state, that nature has provided in such abundance that for several centuries they will not disappear, although we extract some of those elements in growing any product. Take, for instance, lime, iron, magnesium, sulphur, which we find in almost every plant in some proportion. Then there are the elements of hydrogen and oxygen, which are provided by nature in the rain. We have in the eastern portion of the United States a greater abundance of rainfall than in any other section of the country. It varies from forty-eight inches per annum to about fourteen inches just east of the Rocky Mountains. Carbon is an element that is extracted from the air through the operation of plant growth, and that subtle process of nature in converting the hydrogen and the oxygen of the water through the leaves. The three important and essential elements for the production of crops, however, are potassium, phosphorus and nitrogen. Vast territories of this country are now or have been practically without value because of the scarcity of nitrogen. The Department of Agriculture, at Washington, has sent men throughout the world to discover wheat that can be grown in the Northern climes, alfalfa that can be grown on these arid or semi-arid lands, and education which determines as a positive science how nitrogen can be taken from the air and introduced into the soil through certain plants. The adding of phosphate and potash to the soil will produce crops far greater than have been produced from natural soil.

In Sicily, which may be taken as an example of the depletion of soil fertility, the Roman Empire demanded twelve million bushels of wheat per annum for the use of the army of Rome. That country produced wheat and had enough to sell to make it rich; but to-day practically one million bushels of wheat are grown in that country, which shows how the depletion of soil operates against the advance of civilization. We have been accustomed to destroy the very things that give life and substance. The removal of the timber from the mountains, and from the highlands, if done judiciously, will not injure the soil, but if done carelessly, and fire afterwards destroys the soil, then we begin to feel the effects of a disaster. It is so in the Southern states; it is so in this state; it is so in almost every state. Those are conditions which we can see, which we can study, from a distance. But, when we come right home to the actual production from the soil, and we know that each plant grown removes a certain percentage of these elements from the soil, we know that we are depriving future generations and depriving ourselves of the very things to which we are entitled.

Some soils have been destroyed because they are acid. Illinois, I think, presented a splendid illustration of that. From the fact that thousands and thousands of acres produce less grain each year, it was discovered that by the use of powdered limestone the soil was rendered fertile. That is the application of intelligence to the operation of nature. I think what our Commissioner has said regarding the desire to distribute knowledge is right, but this knowledge must not onlybe taken to the farms, it must be driven home by an illustration. That is the object of the Education Department of the state, working with the Agricultural Department. I want to assure you that it is my purpose and my desire to aid in every possible way the co-ordination of these two departments, that they may carry out and deliver to the agriculturist the best information, the best demonstration, the best way, to preserve and conserve the soil in every section of the state.

In closing, I desire to say that what your Commissioner uttered just now, as to the study of prevailing conditions abroad, has been a matter very deep in his heart. Much to my regret, he has decided to sever his connection with the State Department of Agriculture, that he may take up and study, where those conditions exist, not only soil culture, but also that problem of transportation of the products of the soil to the consumer, and study the conditions that prevail regarding animal husbandry. I think he is to be highly commended when he desires to broaden his vision by observing and studying conditions as they exist in countries that have been living longer from the soil than we have, and where people make a more careful study of farming because the population is more dense. In those countries they believe that every acre that is made more fertile is instrumental in reducing the cost of living.

I want to thank you again for the privilege of presiding at this meeting. I regret that I must leave you, but I now turn the meeting over to the Commissioner.

The President: I am very sorry indeed that the Governor could not remain with us throughout this session. I am afraid that the other speakers upon the program will feel that I have had a great advantage over them in being able to speak in his presence. The best I can do to assure them that they will not be deprived entirely of that advantage is to promise very faithfully to deliver to Governor Dix a copy of what they say, so that he may read it.

The next address is the annual address by the president of the New York State Breeders' Association, Mr. George W. Sisson, Jr., of Potsdam.

ANNUAL ADDRESS OF THE PRESIDENT OF THE NEW YORK STATE BREEDERS' ASSOCIATION

George W. Sisson, Jr.

I count it a happy circumstance that our association has been able this year to hold its annual meeting in connection with the New York State Agricultural Society. The particular phase of agriculture in which the breeders are interested bears so important a relation to the entire agricultural life of the state, that it seems eminently proper that there should be close cooperation between the societies. The agriculture of New York State is so varied and presents so many possibilities along special lines, that there have grown up out of the necessities of the case many organizations intended to serve some particular phase of agricultural activity. Thus we have the State Dairymen's Association, the State Fruit Growers' Association, the Breeders' Association, and several others, each doing its technical work in a more or less thorough manner. Without detracting in the least from the importance or the excellence of the work that is being done by these several associations, it is my belief that all their activities should be correlated in some way and that the old New York State Agricultural Society, with which we are now in joint session, should be the clearing house and official center from which would go out to the entire state and nation the benefit of their work.

To carry out such a scheme it would be necessary to do away to some extent with the practice of each association holding an isolated meeting in different parts of the state, and arrange for one selected week of meetings, during which the individual associations might hold their separate business and technical meetings, and then come together in general or combined sessions where all could participate with profit in subjects that are germane to agriculture as a whole. Under the present plan it is not possible for one to attend the many meetings scattered over the state, and the man interested in breeding, dairying and fruit growing has been obliged to choose where his interest seemed strongest and forego the others. I believe this matter is of sufficient importance to warrant the appointment of a conference committee representing the various societies, with a view to bringing about harmonious action along the lines indicated.

The New York State Breeders' Association has good reason for its existence. Started in a small way at a meeting in Hornell, many years ago, of a few practical and devoted men who recognized the need of some such organization, not only as an aid to themselves as breeders but to maintain the prestige of this state as the nursery for pure-bred stock, it has grown greatly in numbers and proven its usefulness to the state in many ways. Following out the idea of federated associations alluded to above, we have affiliated with our organization and working in harmony with us the state associations of eight different breeds of live stock. These hold their separate technical and business meetings and join with us in our regular program on general breeding topics.

It is scarcely necessary for me to speak of the importance of the live stock interests of this state. That animal husbandry is of great economic importance to the state is proven by the 1910 census figures showing nearly two hundred million dollars invested in live stock. With all this great investment, representing over one and one-half million dairy cows besides farm stock of all other kinds, it is estimated that there are but about six thousand breeders of pure-bred stock in the state, owning some seventy-five thousand pure-bred registered animals. These figures are somewhat startling, and indicate the great possibilities and room for better breeding, even in this state which we are accustomed to view as the nursery from which less favored states are to get their new blood. The wider use of pure-bred stock and their high grades through the use of pure-bred sires will come about only upon the basis of proven economic advantage. As breeders, we must evolve, develop and perfect efficient and profit-paying machines for the conversion of the crude raw materials of the farms of this state into valuable finished products. The measure of efficiency in a man, a machine, or a domestic animal is economical accomplishment along definite functional lines. The first requisite of a successful breeder is a just appreciation of the true function of his animal. Hazy and indefinite notions on this point have resulted in haphazard dual-purpose breeding, which has filled our herds with star-boarders and no-accounts whose only excuse for existence might be as fertilizer factories. We must measure our animal rigidly by economic standards and take no excuse for shortcomings.

Just here lies one of the most important relations that the breeder sustains to the state in these days of high food cost. As producers of animal food products, our responsibility to the consuming public is readily recognized. While all may not agree with me and may deem the idea somewhat altruistic, it is the breeder's duty to so exercise his art in the selection of proper types and their development, as to result in an increased and cheapened production which will permit of a less cost to the consumer. Along with this goes our responsibility in a large measure for the healthfulness of the live stock of the state and their resulting food products, and this brings me to a point on which plain speaking seems necessary at this time. The state, by its agricultural laws and through the State Department of Agriculture, has been for years and is now endeavoring to maintain the health of the herds of the state, and particularly to stamp out certain diseases like bovine tuberculosis. If there is any topic on which there should be perfect harmony of thought and action between the state authorities and the breeders it is this. Without doubt some of the earlier work and plans looking to the stamping out of this disease, the economic waste from which can scarcely be calculated, were more or less experimental, and it may be that the very best solution has not even yet been found. We have, however, a definite law relating to this disease and its control, in the administration of which I believe our Commissioner of Agriculture has done the very best possible with the material and funds at his command. I do not feel, however, that his department has had that hearty cooperation and assistance from the great body of breeders in this state that his efforts deserve, or their best interests demand. In the final analysis, the clearing up of our herds rests with the honest breeder and the honest veterinarian. It is distinctly a problem that cannot be solved by state law without their heartiest cooperation.

The state of New York is expending annually several hundred thousand dollars in premiums for live stock exhibited at the State Fair and at the many town and county fairs throughout the state. The object of such expenditure is or should be educational and the tangible result, the keeping of a better class of stock by the farmers throughout the state. To secure such results and to warrant the state in the continuation of this policy, it is a distinct function of the State Breeders' Association to see that unworthy exhibits be not recognized by any award and that competent judges be selected to place the prizes. Each judge should be a recognized expert in his breed, capable of selecting the best types and demonstrating his reasons on the spot to the exhibitors and spectators. At most of our local fairs the judging has descended to the mere passing out of premium money, has been done in altogether too hurried a manner and without reference to making it a feature of general interest to any but the exhibitors and a few stockmen. The State Breeders' Association is glad to cooperate with fair managers, both state and local, and assist in the formulation of prize lists and classifications, in which improvement can often be made, with a view to bringing out better exhibits. It also maintains a list of competent judges of the various breeds from which selection can be made by fair managers. It will be seen that our association is endeavoring to be of practical benefit to the farmers and the state in everything that relates to our animal husbandry.

In closing, let me say that he who takes up the breeding and improvement of the specialized farm animal enters a field than which no phase of agriculture is more fascinating. Animal husbandry is not only the most fascinating branch of farming, but it rests on a solid foundation, the preservation and increase of the fertility of our soils. Considering all of this, the high privilege and accompanying responsibility of the conscientious breeder are readily apparent. To the man who invents a machine more efficient in some process useful to man than has before been known, high honor is given. He has been one of the factors in the higher work of civilization. No less honor is due the man who under authority of the Divine command given at creation has moulded to higher and more efficient service of mankind the creatures under his hand.

THE PRESIDENT: It is a great pleasure to hear one speak as Mr. Sisson does.

When the membership of the New York State Food Investigating Commission was under consideration, there was more or less debate as to who should be appointed. It was desired to secure a number of the strongest men possible, incidentally men who were to serve without compensation for their services. Different industries engaged in handling food products were to be represented, including the legal profession.

It gives me great pleasure to introduce as our next speaker one who has served as legal adviser to the Governor, a man who is eminent for his attainments as a lawyer, and withal one who lives upon his farm near Garrison, Honorable William Church Osborn, a member of the New York Food Investigating Commission.

THE NEW YORK FOOD INVESTIGATING COMMISSION

WILLIAM CHURCH OSBORN

The New York Food Investigating Commission is an official recognition by the state of New York that a food question exists within our boundaries. In it is the idea that a state, three-quarters of whose citizens dwell in cities and whose farmers are underpaid, has an economic question as well as a personal one to consider. It shows that the administration has heard the complaints of the consumer, that his cost of living is too high, and of the producer, that his receipts are too low, and the very widespread complaint of shippers that their shipments are incorrectly reported in quality and in the prices received for the same. Much consideration was given to this subject in the conference of 1911, and it was evident that farmers and consumers alike are two great masses of unorganized and scattered units, with similar needs of protection and with joint interests leading to their mutual accommodations. It is common knowledge that neither the state nor the cities have taken any effective steps to protect their people against imposition, to supply an adequate system of markets and distribution or to secure additional and reasonable food supplies for their people; and this condition of neglect is in marked contrast to the active steps taken to that end by the municipalities of Europe, and one undoubted cause of the fact that food supplies in this country in the midst of cheap and fertile lands are higher in the municipalities than they are in the municipalities abroad.

Much complaint exists of the transportation facilities, and many instances are known of improper action on the part of the railroads and steamship companies, but on that question it can at least be said that those organizations are public in their character and in the hands of responsible men and that they are subject to the regulation of the Public Service Commission, to which complaints can be made and by which proper regulations can be enforced. No such situation of regulation or control exists either in regard to the facilities for trade offered by individuals or commercial organizations or in local facilities for distribution within the cities themselves, and the most superficial examination of the figures shows that a very large proportion of the cost to the consumer is incurred after the farmer's product is delivered to the city limits by the railroad or steamship. It is estimated, in rough figures, that of the consumer's dollar fifty-three per cent. goes to the farmer, seven per cent. to the transportation agency and forty per cent. to the trade and distributing facilities. The recent sales conducted by Mayor Shank, of Indianapolis, have doubtless not been an effort to solve the problem, but to inform the public as to the existing discrepancy between prices to the producer and to the consumer, and in that aspect they have brought clearly to the mind of the public the actual conditions as they exist in that city. Doubtless the same conditions exist in most, if not all, of the cities of this state.

Hitherto efforts to study and correct this situation have been local, individual and occasional. There have been associations of farmers for cooperative sales and associations of consumers for cooperative purchases, and the civic organizations and private students have made some examination of the conditions, with a view to determining what steps can be taken to correct them. The New York Food Investigating Commission was appointed with a view to make these investigations cover the entire state and for examination of the entire problem involved. Some of the problems affect the mutual interests of citizens of the state, widely separated in distance and in occupation, and require the protection of their mutual interests by due legal treatment. Other problems affect the larger economic questions of the maintenance of the position of this state as a great producing and manufacturing unit with a view to so cheapening the cost of living that it may maintain its position as an exporting state, both of food products and of manufacturing. The problems of distribution at the great market centers are primarily municipal in their character and should be solved after examination of the local conditions and local interests, but even these questions affect vitally the interests of such masses of our citizens as to be of state-wide consequence. Manifestly, therefore, the subject is peculiarly fit for study by the state, with a broad, comprehensive view, recognizing the interests of all the different elements involved and covering all of the different sections and centers of the state, both producing and consuming. A detailed and exhaustive scientific study of the resources of the state for the production of food supplies and of the system of distribution of the same is the duty and interest of the common government to us all, and it was with such ideas in mind that the legislature at its session provided the commission, indicated the field of its duties and enabled action to begin, and it was with these ideas in mind that the Governor selected the membership of that body. The act provides for the personality of the commission and for the objects and efforts as follows:

> Section 1. A commission of eleven members is hereby established, to be known as the New York Food Investigating Commission. Such commission shall consist, ex-officio, of the state commissioner of agriculture, the state commissioner of health, the chairman of the public service commission for the second district, the director of the state college of agriculture, the director of the New York agricultural experiment station, the master of the New York state grange, and five other members to be appointed by the governor within ten days after this act takes effect. The members of said commission shall serve without compensation.
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> Section 3. Such commission shall inquire into all questions relating to the prices paid in the state of New York for food and foodstuffs, milk, butter, eggs, cheese and other farm and dairy produce, the purity of the same and the establishment of standards of food quality, correct labeling and honest weights and measures, also into the production, distribution and consumption of such food and foodstuffs, farm and dairy produce, the relations with respect thereto of the distributor and middleman to the producer and consumer, with a view to devising and recommending permanent ways and means of insuring its purity and honest and equitable sale. Said commission shall submit a report, including such recommendations, by bill or otherwise, as in its judgment may seem proper, to the legislature of nineteen hundred and eleven, and if it shall not be practicable to report finally thereto, the said commission shall submit its final report to the legislature of nineteen hundred and twelve.

In passing, I should say that the act reflects great credit on Commissioner of Agriculture Raymond A. Pearson, both for the provisions contained and for the successful passage of the law.

To make progress the commission has divided the work among five committees, each with duties as outlined below:

1. *Committee on Marketing:* (a) Prices and costs; (b) Middlemen. This committee shall examine into and report upon the subjects connected with the handling, distribution and sale of farm products, so as to develop the methods of marketing, and also shall prepare statistics on prices and costs — prices to the producers and costs to the consumers.

2. *Committee on Production.* This committee shall report upon the sources of food supply for the state, covering the areas

suitable for truck farming and to what extent extra-state products must be relied upon. The subject of milk and dairy products also comes under this committee.

3. *Committee on Transportation and Terminal Facilities.* This committee shall study the methods of transportation and the physical facilities for storage, handling and distribution of food supplies at terminal points, and report thereon.

4. *Committee on Cooperation.* This committee shall investigate and report on methods of cooperation in this state and elsewhere.

5. *Committee on Purity, Labeling, Standards, Weights and Measures:* (a) Work of the Department of Agriculture.

A study of this division of work shows that the preparation of a final report, covering the entire subject in the manner which its importance requires, must of necessity take a long time for examination and consideration. It is, however, hoped that the subject of the method of trade and the regulation of dealings between our citizens is already so well understood and is so easy of examination that a preliminary report, with recommendations on that subject, may be expected within a reasonable time, and assistance from the public to the commission by way of specific instances, suggestions for amendments and correspondence is earnestly desired by the commission. If successful methods can be found to gain security in trade much of the friction that has existed on this subject will be avoided hereafter.

The practical interests of the public must, however, center upon the question of prices and cost of distribution. The real point is whether the costs that lie between the farmer and the consumer are not greatly in excess of what is really necessary, and while there are doubtless many cases of individual wrongdoing which heighten these costs, it is probably the case that the system of distribution is cumbersome, awkward, expensive and unintelligent. There is good reason to believe that three and four and five different agencies sometimes handle the individual consignment, each of them requiring an extensive plant for the conduct of business, each of them expecting a profit, and each of them subject to the risks of trade, but if, as there is good reason to believe, the added cost is due to costly methods of doing business rather than to more sinister and concealed causes, the problem is rendered both simpler and more difficult — simpler because it calls only for the exercise of business judgment on a considerable scale, more difficult, because the problem must be different with each municipality, depending on the sources from which its supplies are drawn and the facilities and opportunities of the town and on the ability that may be displayed by citizens in studying and remedying the difficulties which confront it in the matter of distributing its food supplies. The habits of the people, with reference to going to market, to the deliveries by wagon, to the use of the telephone, to the extension of credit and similar matters, also may well interpose a serious obstacle to a general cheapening of the cost of food supplies. Moreover, if the difficulty lies with the methods of doing business in the distributing centers and markets, it is obvious that the state as such can have comparatively little influence in effecting a change. The study of the local situation and the remedies for the local evil must largely remain with the municipalities and their citizens, and it may well be that this commission shall find it necessary to recommend that the municipalities of this state, in conjunction with the citizens, take up this problem of curtailing the cost of distribution as a matter affecting the interests of their citizens with which they are presumably more familiar than any state agencies or commissions can possibly be. Steps to this end are already under consideration in several of the cities of the state. It is hoped, however, that the work of this commission, by virtue of its general view of the situation and its sense of proportion acquired from regarding a number of different problems, each of them with a common factor, will be of assistance to the municipalities in working out the local problems which they must meet.

Space forbids me to amplify the interesting subject of the areas of production and the possibilities of increased production which should be studied in connection with our food supplies. While it is true that the building of country places in the environs of our larger cities has done much to push the farmer away from the home market, it is also true that improved highways and the automobile truck have done much to bridge the distance. It is doubtless the case that large quantities of perishable food supplies are now brought to our cities from long distances by railroad and steamship companies, when the same or better supplies could be furnished by our own citizens from nearby points if a proper local transportation service were organized and if the possibilities were brought to the attention of the farming and market-gardening public. It is hoped that the work of the committee on that subject will do much to bring a realization of these possibilities to the minds of our people.

Cooperation among farmers, both as selling associations and as buyers, exists to some extent at various points in the state and many people consider that through this means a large development of agriculture and a profitable market-gardening can be had. The study of the subject by the appropriate committee will, it is hoped, produce information of a general and reliable kind that may be of service in this direction. It is certain that cooperation among farmers for the sales of their products is essential if they are to secure fair prices and fair treatment from the consignees.

I trust that in this brief outline, I have enabled you to realize the importance of the action of the legislature last winter in authorizing the New York Food Investigating Commission, and I can only add the expression of a hope that the work of that body, before the next meeting of the State Agricultural Association, will be of such a character as to justify the action of the legislature and of the Governor in this important matter.

The President: It is a great pleasure to listen to this paper which has been so carefully prepared. It meets with my hearty approval, except for two or three lines in which Mr. Osborn attempts to place upon other shoulders the credit for doing a good thing which belongs to himself alone.

Our next address is by one who has given a great deal of study to the subject of the paper, and I am sure he will be able to show us the importance from the money standpoint of using better judgment in the selection of food supplies.

Dr. Ira S. Wile, member of the Advisory Board of the Food Committee of the National Consumers' League of New York City, will now read a paper on the ability of the consumer to reduce the high cost of living.

THE ABILITY OF THE CONSUMER TO REDUCE THE HIGH COST OF LIVING BY MORE JUDICIOUS SELECTION AND ECONOMY IN PURCHASE OF FOODS

IRA S. WILE

The Massachusetts Commission on the Cost of Living, in its conclusions, refers to the advance in prices due to the enormous wastage of incomes. With temerity it states, "And the losses through expenditure on a rising scale for luxuries and through wasteful methods of management in the household have been potent contributory factors to the advance of the cost of living." Thus has the gauntlet been thrown down to the consumer. If the statement be true, it is wisdom to consider how the consumer may assist in lowering the cost of living. There is a suggestion that the cost of high living forms a part of the problem of the high cost of living. An analysis of the factors from the overproduction of gold to the effect of the tariff would not be germane to the part the consumer can play in lessening the cost of living.

No one gainsays that it costs more to live at present than at any time within the past decade. In brief, this means that the prices of commodities have advanced at a more rapid rate than have the incomes of the families purchasing the commodities. The general increase in the cost of living may be shown by a consideration of the average expenditure of a normal family with an income between six hundred and seven hundred dollars per annum.

ITEM	EXPENDITURE IN 1901	PER CENT. TOTAL	EXPENDITURE IN 1910	PER CENT. INCREASE OVER AVERAGE 1901-1910
Rent	$113 03	18.48	$126 59	12
Fuel	28 45	4.65	32 72	15
Lighting	6 82	1.12	1 50	10
Clothing	78 76	12.88	94 31	20
Sundries	118 59	19.39	130 45	10
Food	265 93	43.48	345 71	30
Total	$611 58	100	$731 28	

Thus the cost of the necessities of life is shown to be about 20.5 per cent. higher after the lapse of nine years. The striking feature is that the prices of foods advanced 30 per cent. during this period of time. Bradstreet's index for 96 commodities was successively, $7.7769 in 1892; $7.8839 in 1900; and $8.7132 in 1911.

The rise in the cost of foods has not been limited to the wholesale side of business. The retail prices have usually risen with the wholesale prices, but have not always fallen when the wholesale prices fell. This is well shown by the figures of the United States Department of Labor. (Average of the prices from 1890 to 1899, 53 commodities at wholesale and 33 retail commodities, taken as 100.)

YEAR	WHOLESALE PRICE	RETAIL PRICE
1900	104.2	101.5
1901	105.9	105.5
1902	111.3	110.9
1903	107.1	110.9
1904	107.2	110.6
1905	108.7	112.5
1906	112.6	116.2
1907	117.8	120.7

Part of this increase in the retail price is, of course, due to the increase in the number of retail stores and in the rise in rentals.

Reliable figures relating to wages since 1907 are not at hand. According to the United States Department of Labor, the weekly earnings for employees were 22.4 per cent. higher in 1906 than the average from 1890 to 1899. Since 1907 it is probable that prices have advanced more rapidly than wages. Wages usually are behind prices in their advance. The report of the Minnesota Bureau of Labor shows food prices to have advanced there 30 per cent. from 1890 to 1910, while wages have advanced only 10 per cent. to 25 per cent. in the same period of time.

The general relative increase in the retail prices of foods in 1907, as compared with the average of the prices from 1890 to 1899, was 119.4. The relative prices of a few commodities were as follows: Bread, 104.5; milk, 116.8; beans, dry, 118.8; potatoes, 120.6; beef, fresh steak, 120.5; cheese, 123.2; butter, 127.6; corn meal, 131.6; eggs, 137.7; salt pork, bacon, 157.3.

It is interesting to note that the weighted weekly rations of a normal British family, costing in Great Britain $3.31, would have cost in the United States, in 1909, $4.608. Taking the budgets of 2567 workingmen's families in the United States and taking the average cost of foods during different years, the same articles of food, weighted for family consumption, would have cost in 1896, $296.76; 1900, $314.16; 1907, $374.75. The 1907 cost is thus shown to be 26.3 per cent. higher than 1896.

It is important to note that the same foods which in Massachusetts during 1901 cost $370.20 required $478.10 in 1910. With wages and the cost of living advancing at the same ratio, the disproportionate increase in the rise of foodstuffs indicates that consumers have had to adjust their manner of living so as to reduce their expenditures for rent and clothing, etc., or lessen their outlay for foods. This means that underfeeding has resulted, or the foods purchased were of a class that could be secured for a lower weekly amount.

The English Board of Trade from an investigation of 7616 budgets, of which 42 per cent. came from American-British families, found the following percentage of the weekly income was spent upon food:

WEEKLY INCOME	AVERAGE WEEKLY INCOME	PER CENT. OF INCOME SPENT FOR FOOD
$9 73 to $14 60	$12 42	47 62
14 60 to 19 47	16 99	47 15
19 47 to 24 33	21 51	41 19
24 33 to 29 20	26 16	31 78

This serves to indicate the large proportion of the income of the poorer classes that must be spent for nourishment.

With an income between $1500 and $3000, one-fourth the income should be sufficient to supply adequate food for efficiency. For families with lower incomes, from 30 per cent. to 40 per cent. or more of the income is necessary to purchase the foods necessary to sustain life adequately.

Considering food expenditures, it must be remembered that expenditures that do not add to the family efficiency may be regarded as uneconomic. This may mean extravagance in the purchase of legitimate commodities or the wastage due to buying innutritious foods.

A study of the dietaries of 1189 normal families showed that 38.4 per cent. of the food budget went for meats, exclusive of poultry and fish, which brought the percentage to 47.7 per cent. Milk took 8 per cent.; eggs, 3.9 per cent.; butter, 8.7 per cent.; sugar, 5.5 per cent.; flour, meal and bread, 8.9 per cent.; potatoes, 3 per cent.; other vegetables, 2.7 per cent.; fruits, 2.7 per cent.; condiments, 1.1 per cent. The small appropriation made for vegetable foods shows the low food value ascribed to these products by the consumers. The investigation by the English Board of Trade of the cost of living in American towns shows the weekly quantities of foods used by British-American families to be as follows:

Tea, 1/3 pound; coffee, 1 pound; sugar, 5¼ pounds; bacon, 1¾ pounds; eggs, 22; cheese, ½ pound; butter, 2 pounds; potatoes, 21 pounds; wheaten flour, 10¼ pounds; white bread, 8¼ pounds; milk, 5 1/3 quarts; beef, 6¾ pounds; mutton or lamb, 1¼ pounds; veal, ¾ pound; pork, 2¼ pounds. Such a list makes it apparent why the schools need to teach the nutritive value of foods as related to their cost. The United States Department of Agriculture correctly states, "It is quite evident that what is needed among these families (with small incomes) more than anything else is instruction in the way to make the little they have go the farthest." Bread is used to the extent of 8¼ pounds per family per week, as compared with 22 pounds for the same type of family in Great Britain. The higher cost of rolls, cakes and biscuits does not bring adequate return to the efficiency of the family using it, though with a large income no objection could be raised against their use. As an item in the cost of living bread is entitled to greater attention for minimizing waste as well as expenditure.

Knowledge is essential for the consumer as a prerequisite to making food economy. The high nutritive value of milk is scarcely grasped by those who lavish their attention upon the high-priced meats. Milk is more valuable in the dietary, costs less, has no waste, is easily and cheaply prepared for the table in many styles and should be used in larger quantity than meat. Incidentally, the food value of skim milk should be recognized by municipal authorities, who, in the guise of protecting the milk supply, are robbing the consumers of a valuable and cheap food. Milk at ten cents a quart is a cheap food, providing the producer gets his share of the increased price of the milk and the consumer in consequence secures a more sanitarily produced product. The consumer must forget the tradition that beef extracts are more nutritious than beef; that mushrooms have wonderful food value; that cocoa made with water is highly nutritious. When such ideas perish the consumer will make more intelligent disposition of his funds.

The elimination of unnecessary articles, such as useless chlorides at 40 cents per quart and the 23.01 gallons per capita of wines, malt liquors and spirits, would leave a larger sum for correct and economic expenditure. It is manifestly an indication of high living to find that, during 1900, the meat per capita of the United States was 185.8 pounds, as compared with 121.3 pounds for the United Kingdom, 115.94 pounds for Germany, 78.8 pounds for France and 76 pounds for Denmark. The consumer must make a more judicious selection and buy more farm products.

It is true that the demand for perishable foods has increased the cost of living, and this is especially true inasmuch as the average housekeeper has inadequate facilities for refrigeration. The loss in perishable foodstuffs is a large factor in the cost of living. This, together with the waste that is daily thrown away through the lack of information as to methods of utilizing trimmings and "left-overs," is certainly responsible for a large, unnecessary outlay for food. The purchase of foods that appeal to the palate more than to the pocketbook again adds to the cost of living as it may also add to its joys.

Nowhere is waste better seen than in the errors of marketing. Extravagance, inedible foods, purchase in small quantities, purchase in amounts that are beyond daily consumption of perishable foods, and the buying of higher-priced foods when cheaper foods would give greater nutritive value are all to be noted in the marketing. The abuse of delicatessen stores in lieu of home cookery stands out preeminently as a factor in increasing the cost of living.

The development of hygiene and esthetics in packages has brought an immense amount of advertising, for which the consumer pays, but cannot eat. For example, rolled oats in the package cost at the rate of $.066 per pound, while in bulk the price is $.035 per pound. Puffed rice is sold at the rate of $.314 per pound, while plain rice costs $.10 and the cost of cooking does not bring the price to that of the prepared variety. Some gingersnaps that retail at the rate of $.1872 per pound may be procured in bulk for $.12 per pound. The most advertised soda biscuit is sold at the rate of $.144 per pound, while a similar variety may be secured for $.10 per pound. Macaroni in sealed packages costs 2 cents more a pound than in bulk.

The scarcity of ready money often forces persons to be extravagant by purchasing in small quantities. Just as two pounds of soused mackerel may be had for $.25, while one pound costs $.15; or buying allspice in quarter-pound packages brings the cost to $.40 per pound, while a pound costs only $.25; or one variety of cocoa in quarter-pound packages costs $.25 each, while an entire pound may be purchased for $.75, an economy may be made all along the line by purchasing foods in the largest quantity advisable in considering the daily needs of the house and the facilities for keeping foods in an unspoiled condition after purchase. By making judicious selection of foods according to their value in nutrition, sufficient money will be saved to make even greater economies possible.

Questions of palatability may not always be compatible with means. For example, olive oil costs $1.40 per half gallon, peanut oil, $1.03, and cottonseed oil, $.70. The nutritive value is equal; the cost very unequal. While the palate must be consulted in purchasing foods, the problem of economic purchase is to secure the maximum food value for the minimum outlay. The waste of money in purchasing beef extracts for their suppositious nutritive value is astounding. Buying beef extracts in two-ounce packages is at the rate of $3.20 per pound. This is an outrageous expenditure for an article that is really a condiment or a stimulant rather than a necessary article of food.

It may be urged that city dwellers do not have storage facilities enabling them to purchase in quantity. If the proper economies in purchase were made, there would be sufficient money saved each month to allow the rental of another room or a larger-sized flat. This would not alone add to the storage room but would add to the health of the families now living with too great room congestion.

Shopping is now subordinated to convenience. In New York City a walk of two blocks may mean a saving of two cents a pound on many commodities. Paying cash instead of charging often permits the consumer to receive cheaper prices or extra weight. Noting the weighing methods costs little and may result in not having to pay for wood, paper or other containers. Going to market instead of telephoning will save much more than the cost of the message. The opportunity to make the selection of foods is essential to judicious purchase.

The larger economies of purchase can arise only through combination of purchasers or cooperation of producers. If the farmers get about 40 per cent. of the retail price of a commodity, the consumer is anxious to find some way of eliminating the profits of the various middlemen. With potatoes selling at $.30 per 100 pounds at the farm, it seems too much that the consumer should pay $1.00 per 100 pounds. One of the greatest factors in the retail price of foods is, of course, the profit of the retailers. This profit can only be reduced by lessening the number of retail stores. The intermediate profits of the commission merchant and the jobber may be lessened only by doing away with one or both of them. The averaging of their profits between the producer and the consumer would be to the interest of both.

Effort has already been made to secure cheaper rates through buying agents. Groups of housekeepers join voluntarily together for the cooperative purchase of commodities in bulk direct from the producers or from the jobbers. The cost of distribution is saved by each carrying home her share of the purchase from the common receiving place. Even with collective retail purchases a saving is effected through the ability to secure more favorable prices for the larger quantity of food secured.

Collective buying directly from the producers has been tried by small groups for single articles, as eggs or potatoes, and the results have justified a further trial of this method. An extension of this method would be possible if there were common depots for the sale of foodstuffs, either in the city or even near the farms. The establishment of cooperative stores by consumers has been attempted for the purpose of economic purchase and cheaper distribution. The failure of many of these stores has been due to the failure of the people to appreciate the savings that are possible.

If facilities were available for the farmers to deliver their commodities directly through their own representatives to the consumers, I believe it would be possible to establish cooperative markets near the farms to which consumers might go on definite days. Cooperative shipping is by no means rare. To further extend the shipping and to give the consumer an opportunity to save part of the money, now paid for the services of the middlemen, and for the time spent in going to the salesplace nearer the source of supplies, is feasible. Education of the farmer and of the consumer is essential to secure this sort of effective purchasing economy.

Secretary Wilson has suggested the formation of consumers' associations for the purpose of purchasing from farmers' associations. As the average retail store tries to succeed with about fifty customers it does not appear an impossible feat to secure the banding together of at least this small number of consumers to purchase as a unit directly from groups of cooperating producers. For the success of this form of cooperation it is immaterial whether the source of the commodity is from the immediate vicinity or from across the continent. For the development of the resources of any particular district no plan could be of greater value. The farmers would be encouraged to develop their farms to the maximum of efficiency and their returns would be increased. With lower retail prices people buy larger quantities. With higher prices at the farm there is every inducement to increase production. With increased production the farm price can be still further reduced without a diminution of the margin of profit.

City markets were originally established for the purpose of bringing the producer and the consumer together to the advantage of both. With the exception of a few markets this advantage has long been sacrificed to the disadvantage of the consumer for whom the market was especially established. Philadelphia, Baltimore, Richmond, Washington and a few other cities still show markets working on the original plans. The decline of the old type of market is to be deplored. Even the old market basket is disappearing. The retail price now covers up several items charged as transportation. In small cities there is little reason for not establishing markets. In the interest of the consumer they should receive attention. Going back to the soil is no longer possible for all consumers. It is, however, within the range of possibility for most of the consumers to get back to the producers if the market link can be re-established and the system extended.

In 1844, the Equitable Pioneers of Rochdale were established to provide provisions for the twenty-eight poor weavers who had joined together in that excellent association. It seems hard to realize that a large part of the needs of one-sixth of the population of Great Britain is being supplied through cooperative stores that have developed from this humble origin. In Ghent the cooperative store movement was begun by eighteen workingmen. The consumers have it in their power to pursue a similar method to wipe out the unnecessary financial burden that they are now carrying in the form of middlemen. The Patrons of Husbandry endeavored to persuade the granges to form clubs with the object of encouraging cooperative purchasing. Such a plan would lessen the cost of production and enable the farmers to enter into strong competition through cooperative selling direct to the consumers.

Mayor Shank has demonstrated what one man can do in the way of reducing retail prices. The most valuable part of his contribution to this problem of food economy has been the educative force of his demonstration. A wage earners' cooperative association has already been formed for the purpose of continuing his good work and maintaining friendly relations with reasonable prices between the consumer and the producer. The establishment of prices through the action of the law of supply and demand will bring about a correct adjustment of the daily dealings of the producers and consumers. The maintenance of equitable prices is almost an impossibility with the merciless competition by intermediaries who have no place in nature. Even the much-abused cold-storage men will be serving their natural employers, the producers, if the producers awaken to their potential powers. The consumer should offer encouragement and support to any movement that will assist the producer to come closer to him or enable him to approach the farm more directly.

Conservation is the watchword of the day. Back to the farm is a popular slogan. We learn by experience and experience comes high. The high cost of living is teaching the public, producing and consuming, that for greater efficiency of the individual family some changes in the present economic system are essential. While the individual consumer may make progress along the line of judicious selection of commodities for the purpose of making small economies, the best solution for the problem of effecting large economies in purchase lies in the active and sympathetic cooperation of the producers and the consumers.

THE PRESIDENT: We are greatly indebted to Dr. Wile for this valuable paper.

The meeting was then adjourned.

WEDNESDAY, JANUARY 17

MORNING SESSION

The meeting was called to order by President Pearson, in the Assembly Parlor, at 9 a. m.

The secretary read his report (see page 1211), which was received and adopted.

The treasurer then read his report (see page 1212), which was received and adopted.

MR. JONES: I also have in my hands bills which have lately come to me for printing done during the last few days, amounting to about sixty-five dollars. These bills have not been audited by the president. One bill was sent back for correction.

MR. GILES: For the last two or three years there has been a tax conference, so-called, representing all the interests of the state in the study of the tax question. The New York State Grange has been manifest at those conferences. There are several different ideas that, sooner or later, will take form which we believe will be detrimental to the interests of the state in taxation. It is the duty of this State Agricultural Association to have a wide-awake, active representation at the next annual conference, that the interests of agriculture in regard to assessment and taxation may be provided for. I move that such a delegation or committee be appointed for the next annual conference.

MR. GODFREY: It is very important indeed that this association be represented at the tax conference. There is a disposition on the part of some to endeavor to throw greater responsibility upon the agricultural interests in bearing the burdens of this state. The intent of this Tax Conference Association of the State of New York is to have all of the varied interests represented by delegations, giving to each delegation one vote.

THE PRESIDENT: Yesterday Senator Ferris spoke about the desirability of this society having a committee to confer with the bankers' society. Would it be desirable to have one committee on taxation and banking?

MR. GILES: As the mover of this resolution, I want to say that it would be entirely satisfactory to me; only such action should be taken as will be representative. I would be entirely satisfied to make it a joint committee.

The motion was carried.

THE PRESIDENT: In his address last night the president called attention to the fact that there are a considerable number of life members whose interest in the society is dead. It might be possible, under our constitution, to revise our membership and omit their names. If it is possible, it undoubtedly is desirable. In your opinion, would it be well to add a standing committee on membership for the purpose of revising our list of members, in so far as the constitution permits, at the same time making it our business to secure new and desirable members?

MR. JONES: The expenses of this organization must increase with each succeeding year. For the past few years our treasury has had usually a balance of about fifteen dollars or sixteen dollars at the close of the year, with no income in sight, and with bills amounting to fifty dollars or sixty dollars, those bills being contracted only after every possible corner had been cut off by the Executive Committee, which had charge of that work. The necessary expenses for printing and postage, other than that which is assumed by the state, must necessarily increase. In order to meet it we must have, according to our constitution, a larger membership, either of annual members or of sustaining or life members. It is very hard indeed to secure either an annual membership or life membership at meetings such as we are holding now. I believe, if we could have a membership committee fairly well distributed across the state, which would be looking out for persons and new members who are entering into agricultural activities in the state, who would willingly become members of this organization for the information that they might secure through its meetings and otherwise, that our income could be increased and the interests of this organization also increased. So, I believe, we are very wise in carrying out the president's suggestion.

I would move, therefore, that a committee of five be appointed, to be known as a membership committee, that committee to have power, in the first place, of revising as far as possible, by our constitution, our present membership, and of securing new members for the New York State Agricultural Society.

PRESIDENT DAVIS: I suggest that this committee be instructed also to advise and report upon certain methods by which other sustaining memberships may be had, such as was suggested in the address of the president last evening; and that this committee take that into consideration and report at the next meeting.

MR. WARD: I suggest that one of the first things that committee take up be the looking over and revising that list as to certain members who are apparently dead. I know some members, under the present conditions, who do not feel the interest in the work of the society that they did ten or twenty years ago. I doubt whether this society, under its constitution or under the law, has any right to deprive a life member of his membership. They have paid their money and are entitled to be called members of this society, even though they do not attend the annual meetings and show no active interest in the work.

The motion that a committee on membership be appointed was carried.

THE PRESIDENT: I now call for the report of the Committee on Nominations.

PROF. FRASER: Your committee reports that it endeavored to secure the consent of Commissioner Pearson to use his name as a candidate for re-election, but he absolutely declined. The committee now reports as its selection of candidates the following: For president, George W. Sisson, Jr., of Potsdam; for secretary, A. E. Brown, of Batavia; for treasurer, Harry B. Winters, of Albany; and the following list for vice-presidents: First District, John J. Dillon, New York; Second District, Ezra Tuttle, Eastport, L. I.; Third District, Gilbert M. Tucker, Albany; Fourth District, C. Fred Boshart, Lowville; Fifth District, W. R. Smith, Syracuse; Sixth District, O. U. Kellogg, Cortland; Seventh District, W. C. Barry, Rochester; Eighth District, Clark Allis, Medina; Ninth District, Dr. G. H. Davison, Millbrook. As the Executive Committee: E. Van Alstyne, Kinderhook; A. R. Eastman, Waterville; A. Denniston, Washingtonville; F. W. Sessions, Utica; E. H. Chapman, Albany; T. B. Wilson, Hall; W. W. Ware, Batavia; E. W. Catchpole, North Rose.

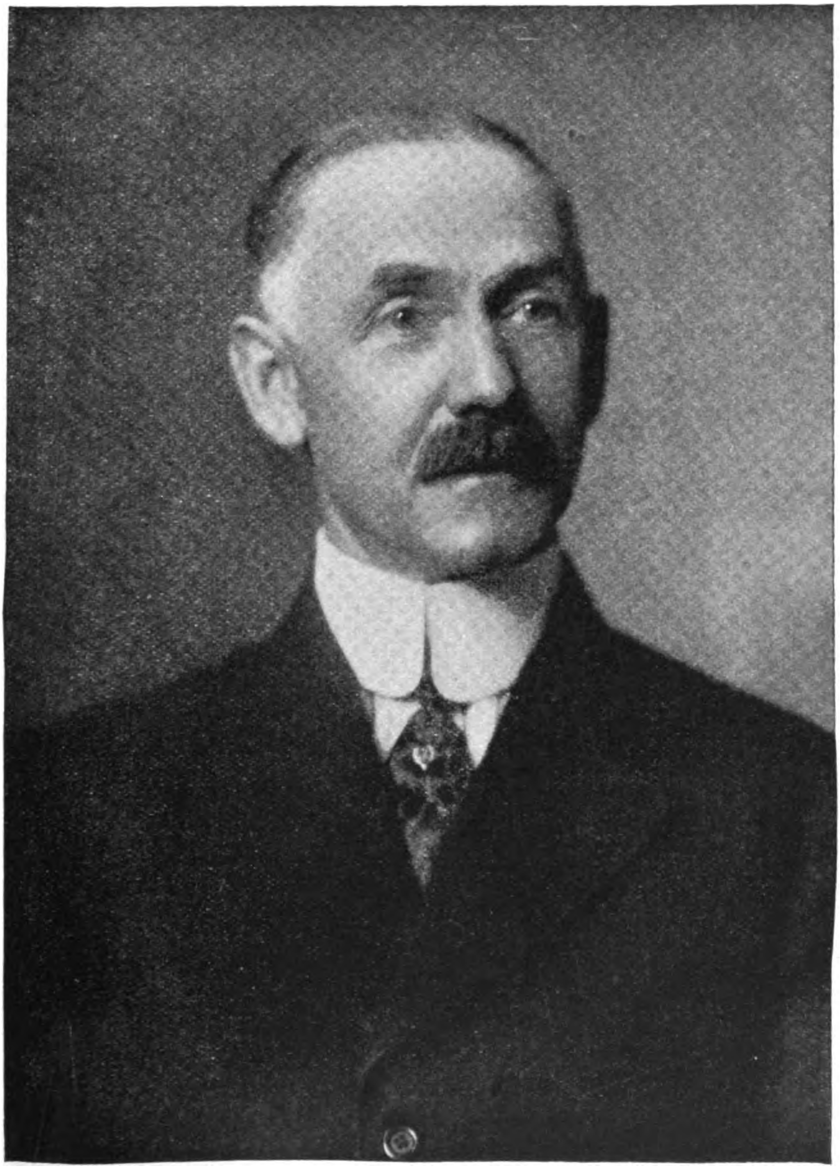

FIG. 45.— GEORGE W. SISSON, JR., PRESIDENT OF NEW YORK STATE AGRICULTURAL SOCIETY, 1912.

Mr. Sisson earnestly urged Commissioner Pearson to reconsider his refusal to again be a candidate, but upon that gentleman's definite declaration that he would not accept re-election, Mr. Sisson finally consented to accept the nomination, whereupon the president put the question of the adoption of the committee's report and the election of the candidates named therein, which was unanimously assented to.

The president designated Professor Fraser to escort Mr. Sisson to the front and presented him to the society as its president for the year 1912.

The president-elect, in a few well-chosen words, thanked the society for the honor done him and begged for as loyal support from the members as had been accorded the retiring president

THE PRESIDENT: We will now proceed with the regular program of the morning.

The first speaker, Mr. Dollar, will talk on farm costs. He is an expert on farm prices, whether farm products or not, as we must all agree when we remember that he once sold a cow for eight thousand dollars.

THE COST PROBLEM ON THE DAIRY FARM

E. H. DOLLAR

When the manufacturer begins to equip his plant for the economical production of whatever article or articles he has decided to place on the market he, if he be the alert, studious and able business man that he should be, will consider nothing but the best, most up-to-date and economical machinery that can be found for the particular work he has to do. Competition along every line of manufacturing to-day is keen, and unless the producer has the best equipment possible to obtain he cannot keep pace with his competitors and he soon finds that he cannot produce the article he wants, at a cost that will enable him to place it on the market on equal footing with other producers of the same article.

The farmer in most cases is also a manufacturer, and especially is this true of the dairy farmer who markets his farm products, his labor and his brains, if he uses them at all, either by the marketing of whole milk or milk products. Coming as I do from St. Lawrence County, not only the greatest dairy county in the state but the greatest dairy county in this country, and having spent the past ten years of my life in producing milk, I want to discuss with you for a few moments one or two of the great errors we as dairymen are making that helps lessen the efficiency of the dairy industry.

We may spend the next fifty years, as we have the past fifty years, in discussing feeding, care and handling the dairy cow for the economical production of milk, and at the end of that time, unless we grasp the situation as it is and decide that we are manufacturers, pure and simple, running a factory where hay, grain, silage, labor and all that goes with it on the dairy farm, are used to produce milk, we will be very little better off than we are to-day, and at the present rapid increase of our city population, the dairy farms of this country will be unable to produce a quantity of milk sufficient to meet the demands of the city consumer.

The trouble with the dairyman is he starts with a machine that is wrong, and then, try as he may, he cannot produce the article desired at a price low enough so that there is any profit in selling his goods at the present market price. The machine he starts with usually in this state, on the average farm, is the three-thousand-five hundred-pound cow, that is a machine which has a capacity of producing three thousand five hundred pounds of milk in one year. Why he continues to do this is simple. The one great problem confronting the dairy farmer to-day, as it has always been, is the replacing of the cows that go wrong or for some reason must be taken from the herd and replaced by others. These cows must be secured in one of two ways, either the dairyman must buy them from his neighbors, or he must raise them on the farm.

Few people realize what the actual cost of growing a calf up to the age of production is. Dairymen in general know that the cost is high in comparison with the earning capacity of the cow when she reaches the milking age, and for this reason they hesitate in undertaking so unprofitable a transaction, or if they do undertake it at all they do not strive to do the work as well as possible, but rather to cut the expense down. In that way the growing and developing is not well done and the cow produced is no better than the average. Several things help to keep the dairymen working along this same line, one of the most potent of all being the continued statement of our experts that a dairy cow should be valued at from fifty to seventy-five dollars, when any man who has grown and developed them knows that any cow grown up to the age of production for anything like fifty or seventy-five dollars is not worthy of being called a dairy cow.

On our own farm, where we have been growing from forty to sixty heifers every year from birth to maturity, we find that it costs us on an average over sixty-nine dollars each to grow these heifers up to one year of age. We find it costs us for each heifer between the ages of one and two years, on the average, fifty-four dollars and eighty cents. If these heifers do not calve until they are thirty months old, and they certainly should not, the cost for the remaining six months will average very nearly fifty dollars, or just forty-nine dollars and eighty-eight cents at present prices on our home farm. It is readily seen, therefore, that to grow a calf in a way that will make her a cow at the youngest possible age, and we all know this to be the most economical method, will cost not far from one hundred and seventy dollars each, or on our own farm for the past two and one-half years, one hundred and sixty-seven dollars and sixty-eight cents. In determining this cost, I have charged only twenty cents per hundred pounds for skim milk, which is a very low price, because in order to have this milk you must separate on the farm and sell or make up the cream and this will not net nearly so high a price as selling whole milk.

I certainly believe that when our statistics and bulletins and lecturers tell us that the dairy cows of this state are worth from forty dollars to sixty dollars each, they are not talking about dairy cows at all, but cows that are just feed-consumers and boarders, and I believe that if these bulletins and reports were made out and published in a way to read as they should, they would read something like this: "One hundred thousand dairy cows, value, two hundred dollars each, and numberless other cows, worth according to their earning capacity, which is the only way we can figure the value of any machine, about one-tenth of two hundred dollars or twenty dollars each." Because we know there is more profit in maintaining the two-hundred-dollar cow than there is in keeping ten or even fifteen of the average cows, I believe that we make a grave mistake when we figure on the cost of producing dairy products by starting our foundation with a forty-dollar cow. The man who will persist in marketing his farm products through the low-grade or boarder cow would be better off if he would leave the dairy business entirely and go into the breeding of some other less important animal, even if it were nothing but goats, because I think a man is more of a benefactor in his community if he grows and milks goats, and does his work well, than he will ever be if he spends his whole life in growing and milking cows poorly.

THE PRESIDENT: There will be an opportunity a little later to discuss this paper.

We will now hear from Mr. Wing R. Smith, chairman of the Committee on Agricultural Education.

REPORT OF COMMITTEE ON AGRICULTURAL EDUCATION

WING R. SMITH

Your Committee on Agricultural Education is pleased to be able to report that the suggestions offered by it have seemingly been well received by both yourselves and the general public. Our recommendations have been adopted and as a result a law enacted, giving the state an advisory agricultural educational board, and we have every reason to believe that its work will be effective and that it will bring about most of the results we expected it would. You are, therefore, to be congratulated.

There can no longer be a shadow of doubt in the minds of well-informed and educated people that agricultural education has already done much for the advancement of the youth of the state and, with time and a better understanding and application of the laws, much more will be done for them. With the liberal education that is now offered the farmer's child, the "hayseed" of the past will be but a memory and the refined, cultivated, educated agriculturist will take his place, and our farms will improve and our crops multiply under his scientific and enlightened methods.

We would suggest that the advisory board carefully consider the suggestions made by President Creelman in his address to us last year, relative to instructors in agriculture and if they deem it wise they shall recommend that these or similar methods be enacted into law.

Unless there should appear to you some other business to be transacted by this committee, we will be pleased with an honorable dismissal.

THE PRESIDENT: This is one of the hardest working committees in the society, and it has done great work for the society and the state. Is it not possible that other questions as to agricultural education may come up from time to time, and may it not be desirable to request the incoming president to appoint a committee on agricultural education?

On being put to the meeting, the report of the Committee on Agricultural Education was unanimously received and adopted and the committee was continued in office.

THE PRESIDENT: The next speaker is one who has had a great deal of practical experience in growing alfalfa. He is often mentioned as the most successful grower of alfalfa in the state. Whether that is entirely right or not, I do not know, but I do know that his fields of alfalfa present a wonderful sight. Mr. James A. D. S. Findlay, of Salisbury Mills, will now talk to us.

COST OF PRODUCING ALFALFA

JAMES A. D. S. FINDLAY

I do not know of a farm in Orange County where alfalfa cannot be grown successfully. On my own farm there are several kinds of subsoil. In one field of sixteen acres, where I sowed my first four acres of alfalfa, the top soil is a good loam, with a gravel subsoil, making good drainage. The second field I sowed contained six acres. This also has a good loam, with a heavy blue and yellow clay subsoil. This field I tile drained, owing to the excess of moisture. But you can grow alfalfa on any soil, if you only fit it right before sowing the seed, and this fitting the seed bed is what I want most to talk to you about, as it is the all-important question.

A field where potatoes or corn have been grown the previous year is ideal. Plow as early in the spring as possible. If the land is heavy, apply three tons of best burned lime per acre; if light, two will do. After applying this lime, harrow thoroughly and sow with peas and oats. These you can cut about July first. After the land has been cleared of this crop, plow, and apply plenty of manure; then harrow with either disc or spring tooth harrow. This will help incorporate the manure with the soil. The last week in July plow again, crossing the first plowing, and not less than eight inches deep. Above all, make this plowing very thorough. I wish I had a few extra minutes in which I could discuss this question of plowing with you. About the first of August, give this field a single stroke of the harrow and then apply five hundred pounds, or more, of any good fertilizer rich in nitrogen, phosphoric acid, and potash. Again go over it twice with the harrow. Now sow your inoculated soil. This completes your seed bed, on which sow thirty pounds of the choicest seed per acre. Harrow lightly and roll with a heavy roller to compact the surface of the soil. You will notice here that I do not quite agree with many alfalfa growers who advocate plowing in the fall or early spring, and that all the cultivation thereafter is harrowing to keep down weeds and compact the soil, leaving only an inch or so of loose earth on which to sow fertilizer inoculation and seed.

In August, 1910, I sowed six acres with alfalfa. This was manured, limed and plowed three times and seven times gone over with a harrow in eight days. Before the seed was sown the land was so dry that horses and men were coated with dust while working. My neighbors assured me that I was killing the land and nothing would grow. On May 15, 1911, the alfalfa was twenty-eight inches high and by October 26 we cut our fourth crop for the year, cured under caps, which yielded over two tons per acre, the last cutting being thirty-two inches high and as thick as a mat. There are men in the audience who live near me and saw this crop growing, cut, cured, and fed, so I must follow the example of the father of this great nation and dare not tell a lie.

In May you can begin cutting this crop for soiling. May 5, 1910, we began cutting this alfalfa which was then twenty-six inches high; on the twenty-seventh the department held a demonstration on growing this forage plant. It was then forty-eight inches high, and several hundred farmers saw it. On June 3 following, we cut one acre which was fifty-four inches high, yielded seven thousand five hundred and sixty pounds, and in just twenty-nine days after that we cut four thousand seven hundred and fifty pounds, a total of six and one-eighth tons of cured hay and cut twice after for soiling. The last two crops were not so heavy. I often wish that I had cured the last two cuttings, for I am sure I would have had eight and one-half to nine tons of cured hay from this one acre, or from twenty-four to twenty-seven tons of silage containing more protein and carbohydrates and returning more nitrogen and potash to the soil than any other crop that you would grow.

As a milk producer it has no equal to-day. It has the same effect on my dairy as the atmosphere has on a barometer. Last October when using alfalfa and corn silage with five hundred pounds of dried grains added, my eighty-four cows produced twenty-five cans of milk per day. I cut off the alfalfa and added two hundred pounds of best middlings to the feed and my cows dropped one hundred and twenty quarts of milk per day. As I had no alfalfa available, I could not get them back to their former work, though adding cottonseed meal and dried beet pulp to their ration. Nothing you can grow will act as such a regulator on the systems of your cattle; their bowels are always right, appetite good, and it just seems to touch the palate. You all know the more palatable the food for either man or beast, the better results will follow.

A gentleman attending this meeting on looking over my dairy last fall and noticing the high condition, asked what I was feeding. I told him silage, alfalfa and dried grains. Then said he, " If alfalfa is doing this I will have it," thus proving that one demonstration in any line is worth ten lectures.

In this great state of ours there are sixty-seven thousand farms on which dairying is the principal business and on which about one million two hundred thousand cows are kept. Now if the dairymen operating these farms would grow enough ensilage and alfalfa hay to maintain these cattle, the increase in milk production, coupled with the reduction in cost of feeding, would amount to over forty-four million dollars per annum, and would increase the value of the farms, I dare not say here how many millions of dollars. The best authorities say that every acre of good alfalfa grown on a farm adds five hundred dollars to its value. I would place it higher.

On an average, one-sixth of these cows are non-producers. One million cows fed forty pounds of ensilage, fifteen pounds of alfalfa hay, five pounds of concentrates will produce one million quarts more milk per day, than if fed twelve pounds of concentrates, with hay and corn stalks for roughage. This million quarts of milk at the average price received would net thirty thousand dollars per day, or eleven million dollars per annum. Seven million pounds of feed saved per day would save to these dairymen thirty-three million dollars, or a total of forty-four million dollars per annum, a net gain for each cow of forty-four dollars.

To feed these cows it would require seven and a half acres of alfalfa hay and seven and a half acres of corn grown for ensilage on each of these sixty-seven thousand farms. This seven and a half acres of alfalfa would enhance the value of the dairy farms in the state of New York three thousand seven hundred and fifty dollars each, or a total real estate value for these sixty-seven thousand farms of over two hundred and fifty million dollars.

The great objection raised by many farmers against the growing of alfalfa is the cost of establishing it, and just let us look that over. One and every acre sown will cost about the following amount:

Three tons of lime per acre, $15.75; 500 pounds fertilizer, $8.25; 30 pounds seed, $7; 300 pounds inoculated soil, $1.50; a total of $32.50 per acre expenditure, against a gain of $44 per cow. One acre of alfalfa will produce enough hay, fed with ensilage, to feed two cows the entire year.

VICE-PRESIDENT DILLON (presiding): We will now hear from Mr. A. E. Nichols, of Java.

COST OF PRODUCING POTATOES

A. E. NICHOLS

Our Commissioner of Agriculture has requested me to prepare and read a paper at this meeting of the New York State Agricultural Society on the "Cost of Raising Potatoes," and tell you our experience with the crop. I suppose some one told him that we had had some success along this line. So I will endeavor to give you some of our ideas as they come to us, after having been in the business since 1890, when we bought a farm of two hundred and forty acres, at seventy-five dollars per acre, going in debt for more than two-thirds of the purchase price.

Before going farther, I want to explain why the pronoun "we" is used instead of "I" in this paper. At the time of the purchase of this two-hundred-and-forty-acre farm, we had in our family three boys aged ten, twelve and fourteen years, and my success as a grower of potatoes and general farmer is in a measure due to these boys, who are still with me, all men with families of their own, living in good, comfortable homes and having all the necessaries of life and some of the luxuries. Six years ago we formed a partnership and we all have equal shares, under the name of "A. E. Nichols & Sons."

In the first place, good potato land must be well drained, either naturally or artificially. As our farm is a gravel loam with coarse gravel subsoil, the matter of drainage has not bothered us any. Of course, clover sod is the best to plow under for potatoes, as well as corn, but, as we keep a dairy of forty cows and plant twenty to thirty acres of corn each year, it is difficult to have clover sod for both corn and potatoes. We have fairly good results from planting potatoes and corn alternately, always plowing under about ten tons of stable manure per acre before the crop of potatoes. We have never had any satisfactory results from the use of commercial fertilizers on potatoes.

In laying out our fields we aim to get them in as large area as possible, so as to have long bouts, as all of these things tend to reduce the cost of production. We do all of our plowing and fitting with four horses abreast, one man driving them, using horses weighing from thirteen to fifteen hundred pounds each. We plow eight inches deep and pulverize and harrow until the ground is fine and mellow. We plant in drills two feet eight inches apart and twelve to fourteen inches in row. We use in planting about fifteen bushels of potatoes to the acre. Formerly we planted an acre with seven to eight bushels, but have decided that it is better to have two eyes with a good chunk of potato to give the plant vitality in case of unfavorable weather after planting. Take great care in selecting seed; use nothing but the very best and cut all seed by hand.

As soon as the planting is done, and sometimes before, we start cultivating, using the ridge that is left by the planter as a guide. We aim to give them at least one thorough cultivation before the plants are above ground. We then start the weeder and go both ways of the field, first lengthwise of the rows and then crosswise.

This we keep up at least once a week until the plants are about eight inches high. As soon as plants are above the ground, so a man can see rows, by exercising great care, we start cultivators and keep them going as long as we can get through without injuring the vines. We have tried flat cultivation, but had so many sunburned potatoes, that we are now hilling them up a little.

We believe in thorough cultivation, not only to keep the weeds out, but as an aid in conserving moisture. We have found that we cannot raise weeds and potatoes on the same ground. In a field planted in drills some weeds will come up in the rows after the weeder has been stopped, and we go over the field with hoes to take them out.

Three years ago we had a thirty-acre field of oats, that had had potatoes the year before, with no Canada thistles to attract attention, but in the oats they came in to such an extent that the crop was damaged at least one-third. We covered that oat stubble with stable manure and planted it to potatoes the next season. We went at those thistles with cultivators and hoes, and at harvest time there was scarcely a Canada thistle to be found on the field. We harvested that season eight thousand five hundred bushels of fine potatoes from this field. The following year we put the field into oats again and seeded to clover and not a thistle showed up. I believe that the thorough cultivation and hoeing we gave the field had much to do with the fine crop of potatoes which was within five hundred bushels of as many as we raised on the same field when we manured clover sod and plowed under for potatoes in the season of 1903.

Since 1901, when we had as promising a field of potatoes as we ever had, that yielded only fifty bushels of marketable potatoes per acre, we have been spraying for blight. I think it has added one-third to our crop for seven years. Since then blight has not been so prevalent in our section, but my opinion is that it pays to spray even when there is no blight, as there are so many insects which feed upon the foliage and when the foliage is kept covered with bordeaux they will let the plants alone.

For bugs we have been using white arsenic and soda for the past four or five years, one pound of arsenic and four pounds of soda to one gallon of water. Two quarts of this solution are equal to one pound of paris green, and it costs us about one-quarter as much as paris green. We cannot give any definite rule as to the number of times to spray for blight. Of course, if spraying is done just before a heavy rain, some of the mixture will be washed off. Our rule is to keep the vines well covered from the time the plants are six or eight inches high, until they are so large that the sprayer breaks them down. We usually go over the vines five or six times during the season, spraying more often when the weather is hot and wet.

Our spraying outfit consists of one Aroostook six-row sprayer, one galvanized iron tank with pump, such as is used by threshers, and two pieces of rubber hose, one two-inch hose about twelve feet long, used to pump water from a pond or stream, and one to fit over the spout of the pump to throw water from the pump into the sprayer. So when in the field with a large tank of water we drive along with the sprayer, throw the large hose into the tank, attach one end of the small hose to the pump, throw the other end into the sprayer tank and fill the sprayer in this manner, which saves all handling of water by hand. In this way one man will spray eighteen to twenty acres in a short day, or about three acres per hour.

Dissolve one hundred pounds of blue vitriol in thirty gallons of hot water. Put this into a barrel and put in lime as needed. When vines are small use about four pounds of vitriol and the same amount of lime per acre. Increase this as the vines grow larger, up to seven pounds of each per acre. For bugs use three quarts of the arsenic solution per acre.

We commence harvesting our potatoes when they are well hardened, so that by careful handling they will not peel. If we get a chance to market them from the field we sometimes harvest them somewhat green, but prefer to let them alone until the tubers and vines separate readily. We dig them with four horses and with from four to six pickers and two men and one team to haul them to cellar or car. If we have six pickers we need two teams to haul and keep crates handy for pickers. In this way three to four acres in a day can be harvested.

As to the cost of growing potatoes, that, of course, will differ and depends somewhat on the amount produced per acre. The following is our estimate, covering the past ten years, allowing a two-hundred-bushel yield per acre:

Plowing and fitting	$4 00
15 bushels seed at 55 cents	8 25
Cutting seed	75
Planting	1 50
Weeding, cultivating and hoeing	6 00
Spraying for bugs and blight	5 00
Harvesting	$7 50
10 tons stable manure	10 00
Interest and taxes	6 00
Total	$49 00

This would make the average cost per bushel to the producer twenty-four and a half cents.

As to the matter of marketing the crop, most of our potatoes are sold to our local dealers, and we believe that here is where there is a chance for a benefit to both the producer and consumer. As we have looked into this matter, we find that the consumer pays about forty cents per bushel more for potatoes than the producer gets for them.

After making a careful estimate we find that our potatoes have brought us on an average for the last ten years forty-five cents per bushel. This includes the expense of storing, handling and shrinkage on whatever part of the crop we stored.

THE VICE-PRESIDENT: The next paper is by W. W. Ware, of Batavia.

COST OF PRODUCING TRUCK CROPS

W. W. WARE

The subject given me, that of the cost of producing truck crops, is one that consists of so many variations that it is impossible for me to give the exact cost of any crop, one year with another, as conditions are different each year. My experience in truck crops has been confined entirely to growing crops on muck soil, and I know nothing of their expense on uplands.

Ten years ago I entered into partnership with W. L. Bonney, of Batavia, and since then we have been known as the firm of Bonney & Ware. We began clearing a piece of swamp land consisting of seventy-five acres, draining and clearing what we could each year, until at the present time we have about fifty acres under cultivation.

There is probably no soil that produces as many weeds as the muck soil. Weeds of every kind and description, known and unknown to man, are found to grow and thrive most luxuriantly on muck soil, and especially on that of Bonney & Ware. We have the reputation of keeping our crops very clean and free from weeds, and so we do, and that is where the main cost of the crop comes in, for we cannot afford to allow the weed crops to consume the plant food that we are feeding the growing crop through tons of fertilizer used each year. I have often been asked which crop was paying us the best, and which cost the most to grow. We have never kept a separate account of each crop grown, and are not able to give a correct answer to the above questions. However, since making my estimates for this article, I find that the cost of each per acre does not vary as much as one might think, as you will see from the following figures.

In growing a crop of celery we will estimate the expense of an acre as follows:

Plowing and fitting	$6 50
Cost of seed	1 00
Sowing seed and growing plants	10 00
Fertilizer	38 00
Marking	1 00
Setting plants	15 00
Weeding and hoeing	8 00
Cultivating and banking	$10 00
Harvesting	30 00
200 crates for packing celery	30 00
Drawing to car and loading	5 00
Total	$154 50

About twenty thousand plants are set on an acre. Of these easily two thousand either fail to grow, or else make what the celery man calls "pups" or "fillers." That is put in and not counted, thus leaving eighteen thousand heads or plants for which the average price paid the grower is about 18 cents per dozen, or 1½ cents per head. Eighteen thousand heads of celery sold at 18 cents per dozen, or 1½ cents per head, would give the grower $270, less the cost of growing, $154.50, leaving the grower per acre $115.50. This does not figure out unfavorably for the grower, provided he can always come out as well as this, but he does not. There are so many "buts" and "ifs" in a truck grower's business, so much care and pains must be taken in growing a celery crop.

The first crop we ever grew we lost entirely because we did not bank it soon enough, and every stalk was cut down by the frost.

Not the first dollar was realized from that crop, although cost was there just the same. One year ago we banked it, or put the soil up to it, a little too early. The weather came off warm after this work was done, the result being a rusty crop of celery which sold at about half price, thus bringing us back about the cost of our crop. This last year the price of celery has been very high, on account of the loss of plants which were killed by the hot winds, and severe drought in the month of June while the plants were still in the seed beds. Very few growers saved one-half of their plants. We had sown seed for fifteen acres, but saved only enough plants for about eight acres.

In growing a crop of onions the cost does not vary a great deal from that of the celery and is about as follows:

Plowing and fitting	$6 50
Fertilizer	38 00
Sowing same	1 00
Seed, 6 pounds at $1.50 per pound	9 00
Sowing same	2 00
Hoeing 8 times	16 00
Hand weeding	$40 00
Sorting and drawing to crib and car	30 00
Total	$142 50

A fair average crop is around five hundred bushels per acre, and fifty cents per bushel is a little above the average price that we have sold for. Five hundred bushels sold at 50 cents, or $250, less the cost of the crop, $142.50, leaves the grower per acre, $107.50. This also would not be so bad if the grower always realized this amount net per acre in growing a crop of onions, but he does not, for he has several difficulties to encounter. In the first place, they may be struck with an onion blight. If not the blight, there is the thrip or onion louse, which attacks the onion stalks or bellows. If the crop escapes both of these, there is the onion maggot still waiting for it. Last year on some trial plots that we were growing, the maggots took fully one-half the crop. One year ago on a plot of ground less than an acre, on the Buffalo, Rochester & Pittsburgh Railroad farm, we grew for them six hundred and twenty-eight bushels. Last year on the same plot only two hundred and fifty bushels were grown.

We will next take up the lettuce crop. This is known as the gambler's crop, but Bonney & Ware do not play the entire part of the gambler with it. We gamble with the growing of it, but not in the selling, as we contract our crop before it is sown; in fact, our next year's crop is sold now, all we want to grow for next season. The chances we take in producing the crops are practically the same as in growing celery and onions.

In growing the lettuce crop the expense is as follows:

Plowing and fitting........	$6 50	Weeding and thinning......	$30 00
Fertilizer	38 00	Cutting, sorting and packing	30 00
Sowing fertilizer...........	1 00	Hauling to car............	5 00
Cost of seed...............	4 00		
Sowing same................	2 00	Total	$128 50
Hoeing 6 times............	12 00		

Our contract price per package is 35 cents, and 600 packages per acre should be a fair average crop, which would sell for 600 packages at 35 cents, or $210, less the cost of crops, $128.50, leaving the grower per acre, $81.50. This would not be a very bad crop if the grower always realized this amount per acre, but, as with the celery and onions, he does not. There are many diseases for the lettuce crop. We have had many, many acres almost ready to cut, and in less than three days the crop has been wiped out by what is known with growers as the lettuce drop, in which you will find the under leaves beginning to decay, and in a day or two it will have reached the heart.

One year ago we had about four acres ready for the car and were packing and shipping with all our force, when a big freeze-up overtook us, and the next morning it was "good-by, lettuce." As I have said, it was called the gambler's crop for various reasons. The price varies so much on the market. A good crop throughout the country soon overstocks the market and many a grower has had his stuff dumped on the garbage pile because it would not sell for enough to pay express or freight charges, and he has bills sent back for the same. I have often known of its being dumped on the garbage pile and inside of two weeks it would sell for one dollar and fifty cents to two dollars per package. The lettuce we grow is known as the Big Boston head lettuce and the first and second grades are packed in boxes, twenty-four heads to the box making the first grade, and thirty, the second, selling at thirty-five cents per package, finished. We prefer to sell for this price rather than to take the variations of the market. At these prices you will see the grower is getting less than one and a half cents per head for the large Big Boston head lettuce. Of course, we grow this in the summer season and out of doors, not at this time of the year. One head of our lettuce will easily make at least four orders such as you will get on a Pullman diner or in a first-class café, costing from twenty-five cents to thirty-five cents per order. I think you will find that these prices do not vary the year around, no matter whether the grower is getting two dollars a package, thirty-five cents, or it is being dumped on the garbage pile, and he is obliged to send on his check, to pay freight or express.

I have tried to give you as nearly as possible the cost of some of the truck crops with which I am acquainted, but, as I said in the beginning, conditions vary so much. Weather conditions, climatic conditions, too wet or too dry, too hot or too cold, all have a tendency to affect the cost of growing a truck crop.

In my report no amount for overhead charges is given, such as interest on capital invested, taxes, depreciation of stock, tools, etc., also no salary is charged up for either Mr. Bonney or myself. As is usually the case with the farmer, he gets his. board and clothes for what he does himself, and takes what is left for his salary, provided there is anything to take.

Yesterday the question was asked, " How does the commission man set the price on our products ? " I have seen a little of it on the market, and my experience has been this: The business of the jobber and commission man is done from one to four o'clock in the morning. The grocer, or the man who delivers the goods to the consumer, is not the man who receives the shipments from the farmers. The grocer gets his goods from the commission man. The goods that are shipped to New York and Philadelphia, by the grower or by the jobber, are delivered in the cities. The small towns surrounding those cities send in to the large cities for their goods. The grocers in my own town, Batavia, send to Buffalo or Rochester for their goods. We never supply them with our goods for it does not pay. We prefer to send our stuff to Philadelphia or New York. Our grocers sell from two to three or five packages of lettuce a week. They want it delivered twice a week. They send up for two or three boxes to the commission men in Buffalo. The same is true of all small cities; they send in where the goods are delivered by the carload. Although the jobber receives the goods by the carload the commission man, as a rule, does not. The average commission man is not able to handle a carload of truck produce; therefore, the jobbers receive those goods by the carload. The commission man supplies it to the grocer and the small houses in the smaller towns, or to the smaller grocery houses in the cities. The commission man knows about what his orders are going to be for that day. He goes down to the market where your carloads of stuff are handled. The jobber is on the job at one o'clock in the morning. From the railroad man he learns how much stuff is on the market. If there is a lot of it he has to begin to work it off. The commission man is already there, and if he sees that the market is glutted, he says he will not buy for a little while, expecting to buy for less money; he waits until the jobber comes down with the price. That is where the prices are fixed by the jobber. The commission man only buys what he knows or expects he has an outlet for for that day. He does not overstock himself to have these goods go down on his hands; he would rather have them go down on the jobber's hands or the farmer's hands. I may have a shipment of goods in for that day. The commission men buy about half of my shipment. The jobber, or the man that you send it to, has that on his hands. What is he going to do with it? The man who is buying stuff to hand out to the consumer has only bought what he is satisfied he is going to get rid of. He is not overloaded with the goods. The jobber has to put the price down, work it off and get what he can. For that reason you receive different reports on the goods you have shipped. He probably reached the market early in the morning and obtained good prices. The rest of it sticks all day and he sells it for what he can get.

THE VICE-PRESIDENT: We now have a paper by W. N. Giles, secretary of the New York State Grange.

COOPERATIVE BUYING AND SELLING AS IT AFFECTS THE PRODUCER AND CONSUMER

W. N. GILES

The high cost of living has brought forth statements from financiers, economists, and others, who see only one cause for it, which is a diminished production of food supplies, caused in some instances by worn-out soil, discouraged farmers, inadequate and improper tillage, ignorance and shiftless management of the farms. They forget that three elements and only three enter into the consumer's cost of living, viz., production, transportation, and distribution. If the consumer's dollar were equitably distributed among these three departments, the problem would be nearly solved. When, however, the charges for transportation are fixed, and fixed upon a basis of stock invested, not to speak of fictitious stock, of bonds carrying large rates of interest, of salaries out of proportion to the earning capacity of any man, of wages high and growing higher and out of proportion to the wages that it is profitable or even possible to pay upon the farm, if the cost of distribution is to be controlled by the vast aggregation of capital, and the producer is to receive only what is left, be it much or little, then the question cannot be solved.

It is proposed that a large fund be raised to loan money to farmers and would-be farmers, at a low rate of interest, a sort of subsidy. This is not necessary; it is abhorrent to American manhood; it teaches paternalism. Let us wipe out the unjust discriminations; let us place agricultural producers upon a just and equitable basis with transportation and distribution, and the question is solved. Show a fair field and reasonable profit and the land will be occupied and intelligently cultivated, and consumption will not overtake production for many generations yet to come.

There are problems that must be met. The whole social and economic structure of the state must be brought to realize that the interests of the producer, the transporter, the distributor and the ultimate consumer are correlated and that an injury to one is an injury to all. These problems can be solved and these ideal conditions secured by an intelligent, practical and comprehensive system of cooperation. To speak of this cooperation is the subject of my paper.

Several years ago the Order of Patrons of Husbandry, known as the Grange, was established, one of the planks of its platform being: "For our business interests, we desire to bring producers and consumers, farmers and manufacturers, into the most direct and friendly relations possible. Hence, we must dispense with a surplus of middlemen, not that we are unfriendly to them, but we do not need them; their surplus and their exactions diminish our profits." Upon this platform has been built many a successful enterprise that has brought the good times nearer at hand. Not all of these ventures have proven successful, but enough have to show the great possibilities. Although the Grange, bound by a close fraternity, cannot give all of its work to the world, we can cite some instances of a successful work along these lines.

As a practicable enterprise, Onondaga County Pomona Grange has a plan in operation, which, although in its infancy, bids fair to be of great value, and already has resulted in much good to its members. This must, from its very nature, be confined to the Grange membership, but there is a way by which every worthy farmer may get into the Grange. The plan is that of collecting statistics of farm crops, to the end that its members may have an absolute knowledge of acreage and yield of principal crops. A chairman of the agricultural committee is appointed, who has correspondents in the different granges. These correspondents, who, as far as possible, are the ones who make up the estimate for government reports, collect and forward this data to the central office, where it is tabulated and the general result is forwarded to all granges as a confidential communication. This has given a very practical and valuable fund of information to all the granges and has proven of much value to the producer. It is believed that it will be of much greater value as its merits become better known, and its sphere of action enlarged. The same county has a plan in embryo, which will soon be an accomplished fact, of establishing in close proximity to the public market in Syracuse a storehouse, where goods may be stored, if the market is not satisfactory. In this way the farmer may be protected from the bulling and bearing of the market by the unscrupulous speculator who now hangs about the market and preys upon the farmers.

The Cayuga County Grange Trade Association has conducted a large and profitable trade, both in selling and buying, through a county trade secretary. They have bought coal, feed, seeds, twine, etc., in car lots and distributed them among the various granges of the county. They have shipped hay, potatoes, barley, wheat, etc., realizing more for their products and yet furnishing them to the consumer at a marked saving. They did a business of two hundred and twenty thousand dollars in 1911, at a cost of one thousand four hundred and sixty-two dollars and twenty-five cents. To be of still greater usefulness this needs a central office or clearing house to bring the producer and consumer in contact and this the State Grange hopes to do in the near future.

In the same county two granges have united in cooperative trade, bought property and are doing a successful business. I will give you the history of this enterprise, in the words of one of its promoters, Mr. Edwin Casler:

"In giving a history of the Scipio Patrons Supply Company, perhaps it would be well to tell where our place of business is situated. We are about eleven miles south of Auburn, Cayuga County, and one-fourth mile south of Merrifield Station, on the New York, Auburn & Lansing Railroad. About twenty-two years ago the Lehigh Valley Railroad Company owned this line and tore it up, leaving several places of business along the line unoccupied, our own place being one of them. When the New York, Auburn & Lansing Railroad Company built the present line on the old roadbed, it made everyone along the road feel as though they would like to see the same old places of business open again for trade. The place where we are doing business was owned by a certain John Snyder, who had made considerable repairs on the buildings that had stood idle for some eighteen or nineteen years. He had been promised a siding by the railroad but could not seem to get them to put one in. Mr. Snyder, being a man eighty-three years of age, did not feel like fighting the railroad company and so he let the matter drop.

"Sherwood Grange is about two miles to the west of the supply company, and Eureka Grange is about two miles to the east. Committees from the two granges met with Mr. Snyder, and an article of agreement was drawn up for the property, providing we secured a siding by July 1, 1909, under the following conditions: We were to pay one hundred and fifty dollars for the rent of the property from July 1, 1909, until July 1, 1910; then we were to buy it for four thousand dollars. The manager of the New York, Auburn & Lansing Railroad promised that they would put in a siding as soon as the ground settled in the spring. Did we get the siding? No! We kept at work on it until July 1, 1909, and we were no nearer getting the siding then than we were the February before.

"In the meantime the manager of the railroad decided that we did not need a siding. That, however, did not discourage us, for we brought about a hearing before the Public Service Commission in the city of Auburn, September 13, 1909. They immediately ordered the railroad company to place a siding there within thirty days or show cause why they did not and the siding was built in a very few days. Our committee canvassed for the sale of stock and was very successful, selling between four and five thousand dollars' worth in about two days. We were incorporated, November 6, 1900, for ten thousand dollars, elected our officers and hired a business manager at a salary of nine hundred dollars per year. He has been with us for two years and has been very successful. On July 2, 1910, the officers met at our place of business, paid Mr. Snyder for the property and received a deed for it. November 14, 1910, was the date of our first annual meeting and, according to the report of the business manager, we had done the following amount of business: Sales of general merchandise, $23,997.73; sales of grain, $6,478.43; fertilizer, $10,239.60; total, $40,715.76. We also made repairs on the property of over $1,100. At the end of the stock year, which was July 1, 1911, we were able to declare a dividend of six per cent. and had a surplus left.

"At our second annual meeting, held November 13, 1911, according to the report of our manager, the following amount of business had been done: General merchandise, $29,531; sales of grain, $15,988; fertilizer, $9,203.25; total amount of business for the year, $54,722.25, a net gain over last year of $14,006.49."

In 1877 the Owasco Grange took up the matter of fertilizers, which were then selling at very high prices, according apparently to an agreement among dealers to maintain these prices. It was said that there was a great secret process in their manufacture and formula. This grange took it up and began an intelligent study of the subject, going to Cornell, which was then, as it is now, a source of reliable information, and learned that there was no mystery about it, that a fertilizer was composed of simple materials, easily obtained and easily compounded. Then this grange set about getting the material prepared for use and failed. Not daunted, they obtained some slaughterhouse bones, some sulphuric acid from a nearby paper mill and went into an old barn, and started in by hand. The result was a compound fertilizer ready for use, at about twenty-six dollars per ton, equal in value and analysis to the fertilizers then on the market at fifty to sixty-two dollars per ton. The secret was out; farmers knew what they wanted, what it ought to cost and how to get it. Then it was that a large fertilizer house in Philadelphia came forward and offered to supply this grange at a reasonable figure, and did so, and the price tumbled to not only the Grange, but to all farmers. While the Grange may not claim all the credit, it was the first to buy at a reasonable figure.

We have learned that it is possible to make great savings in buying supplies for the farm and home by dealing together, but we have been much less successful in selling our products. There is a call for some successful plan of marketing. That we have not been successful in this is because we have always worked on the plan that there is a natural gulf between producer and consumer, and a warfare exists between the two. This must be overcome, and the two interests brought together, and taught that they have a common ground upon which to meet and that the gulf should be narrowed as much as possible, if not actually eliminated. This we believe can be done by an establishment of some form of club, or association, of consumers, who will buy their necessities at first hand. This idea is worthy the thought and study of everyone who is a consumer, and this society, founded upon the necessities and for the improvement of agriculture, can do no better work than through a campaign of education in the cities to teach them that there may be a great economy for them to bunch their orders, and buy direct. The producer will be glad and willing to meet them on some middle ground that shall be mutually profitable to the consumer and producer.

I want to read a letter from T. B. Pengelly, president of the Irondequoit Grange: "Eleven years ago our grangers thought they were paying too much for coal and drawing it too far, so we appointed a committee to look up the matter.

"We found it advisable to organize a company of grangers and incorporate under the state law, with a capital stock of five thousand dollars, known as the 'Irondequoit Coal & Supply Company.' We soon outgrew that and increased to fifteen thousand dollars. We outgrew that, and now we have a capital stock of twenty-five thousand dollars.

"We are splendidly equipped. We have five acres of land close to the city line and next to the Rome, Watertown & Ogdensburg track, with three large warehouses and one large coal chute, also grain elevators and a milling outfit. We have four teams of horses, a large city dray, real estate and buildings valued at twenty-five thousand dollars, and our last inventory showed that every dollar invested in stock is worth two dollars and thirty cents. We are declaring ten per cent. annually and leaving the rest in the business.

"Report of business done during the year 1911, $149,917.40. The number of cars unloaded during the year is as follows: Cars of oats, 76; cars of hay, 76; cars of ear corn, 13; cars of shell corn, 12; cars of soft coal, 185; cars of hard coal, 110.

"These are some of the larger items, for we sell everything that a farmer needs. When we first started we paid our manager four dollars per week. Now we pay him thirty-five dollars per week. We have also a basket factory. We have four men making baskets all the time. Every gardener uses from one to two hundred dozen baskets every year, and we have to buy almost all our horse feed, which is very different from the general run of farmers.

"I could tell you a great deal more about our company, but I think I have told you enough.

"Fraternally yours,
"T. B. PENGELLY, *President.*"

MR. STEVENS: It is customary among railroads, when an application is made for a siding to an industrial plant or to open up an agricultural territory, to immediately send the industrial commissioner of the road to that point to investigate the matter and see if the produce in that locality will warrant a special siding. If he finds that it will warrant such expense, the surveyor lays out the line, the division engineer estimates the probable cost of the siding, which is decided under the rules of the Public Service Commission, and the person whom it is to accommodate is advised what portion he must pay. This portion is specified by the Interstate Commerce Commission or the State Commerce Commission. Since I have been connected with the industrial department of the Lehigh Valley Railroad I have never known an instance, where a siding would pay, that it was not installed as quickly as possible with the operating force at hand. I have never known one instance where one concern was favored over another. There have been instances, undoubtedly, where the railroad officials themselves, not being as familiar as some others with possible agricultural development, have refused to put in a siding because they could not see the freight. But they are changing their attitude in that respect, and whenever a siding is asked for in an agricultural territory now, as agriculturist of the road, I am asked to investigate the agricultural possibilities of that locality.

The policy of the road is not to discriminate, but to put in sidings wherever they will pay, and cooperate with all agricultural communities, as far as it possibly can.

The Vice-President: It occurs to the chair that the agriculturist of the Lehigh Valley Railroad is entirely right in his statement that, in some cases at least, the railroads are changing their attitude on that subject. Within a year or two the truck producers in New Jersey had some trouble to get a siding in the road near Red Bank, and the grangers there took it up and pursued the subject for some months, and were finally turned down. Then they banded together, put up the money and proposed to establish a boat line from that section into New York for the purpose of transporting their own stuff. As soon as that announcement was made the railroad company changed its attitude right away and sent them word that it would put in the siding.

We now have the report of the Committee on the Development of Agricultural Resources, by the chairman of the committee, Honorable William Cary Sanger.

REPORT OF COMMITTEE ON DEVELOPMENT OF AGRICULTURAL RESOURCES

William Cary Sanger

Your committee has for a long time believed that the most important work that it could do would be to submit a report on the subject of agricultural surveys, with distinct and specific recommendations in regard to the way that these surveys could best be carried out. Much work was done, and a report was practically finished, but it was found impossible to secure the unanimous approval of the committee to the recommendations which were suggested, and to our very great disappointment, and very reluctantly, we have felt that we should not now present to you any report on this subject, thinking that better results would come from unanimous recommendations on the subject.

I do, however, feel warranted in reading a statement which I think that all the members of the society will approve, descriptive of what an agricultural survey should be.

The society is aware that this committee was appointed following the adoption by the society of the following section in the report of the society's committee on future activity:

> In some localities the farmers are beginning to learn and overcome many of their difficulties through cooperative clubs, societies or companies organized among themselves and by themselves. This society will encourage such cooperation and assist in their organization and development. We recommend a study of conditions in both this country and abroad by agents of this society or of the Agricultural Department, with the purpose of discovering means for the development of waste lands, the increased production of those now in cultivation, and the improvement and perfection of animal and vegetable products.

In the report submitted by this committee to the society a year ago, certain principles, which the committee believed to be fundamental, were submitted and received the approval of the society. The president was authorized to appoint a committee on the survey of agricultural resources and the following committee was appointed: Dean L. H. Bailey, chairman, Dr. Boothe C. Davis, Dr. W. H. Jordan, Hon. J. W. Wadsworth, Jr. The Committee on the Development of Agricultural Resources, in connection with this committee, has spent most of its time in studying the question of agricultural surveys, believing that there was at least the possibility of material benefit to the farming community along the line of a wise development of the agricultural resources of the state, as the result of such work. A carefully studied report on this subject was prepared, but at the last moment it was found that it could not, for the present at least, secure the unanimous approval of the committee, and it has, therefore, seemed wise, much to the disappointment of this committee, not to submit that report at the present time. It is believed that a further study of the subject, leading, it is hoped, to unanimous action on the part of the committee, would be of a great deal more value than the submission of a minority report. It may be well, therefore, to submit the following statement in regard to what an agricultural survey should be.

The purpose of an agricultural survey is to make a physical valuation and to determine the agricultural facts in the different sections of the state, in order to aid the farmer to make more profit from his land and to derive more satisfaction from his life. It is necessary to know exactly what is the agricultural condition of any region before much can be undertaken in the way of improving it. For example, before much can be undertaken in the way of improving milk production, it is first necessary to know how good or bad the present animals are; this would mean that all the animals in a region ought to be tested to determine whether they are paying for their keep. When the deficient animals are recognized, then they may be disposed of and an effort made so to improve conditions that the remainder will produce the very best results. The first necessity in the real development of a mining country is to know how much ore there is, of what kind, where, and all the difficulties of mining and marketing it, and the same is true, as well, of any agricultural industry. The first necessity in developing a good lumber business in a region is to know the extent of the forests, the kind of trees, the production per acre, the ease or difficulty of harvesting it and the facilities for putting it in the trade. Agriculture is a series of trades and occupations. Before any one of these trades can be highly developed, it is essential that all the deficiencies be known and all the possibilities be estimated. When these facts are known for all the different agricultural trades, then we shall have data for the beginning of a thoroughly sound agricultural condition. The farmer lives on his land and is a part of the very community in which his business is located. Unlike the professional man and the general business man, his residence and his factory or place of business or office are not separated. The farmer must live the life. Therefore, it is essential, to the best results, that all the facts in regard to schools should be ascertained; also in regard to roads, churches, organizations of all kinds, transportation, cooperation, libraries, and all the other units that go to make up a satisfactory community.

A survey should first of all take account of the general physical or natural conditions of the community, comprising a charting of the soils, a study of the local climate, and a general inventory of all the resources in the way of streams, forests, small water-power, building stone, ores, game, or anything else that is prominent in a community or may be a source of business and profit. This should be followed by a general study of the agricultural business of the community, something on the line of the farm management surveys that are now being made in different parts of New York State.

After these fundamental inventories are made, the regions should be gone over with special studies of any industries that are particularly in need of investigation. If it is a dairy community, a study should be made to determine whether the best possible results are being secured and suggestions made for improvement. If it is a potato-growing community, a similar study should be made of the potato crop and all the conditions that either hinder or favor the growing of potatoes, including the study of soils, fertilizers, disease, insects and other matters that are peculiar or applicable to that particular community. If it is a hay-growing community, the same kind of study should be made of pastures and meadows. All the forest lands on farms in the state should be very carefully studied and estimated in the same way, for the probability is that our forest production could be increased several times in value by the application of good forest and business methods. Eventually, all the agricultural interests of the state should be studied directly on the spot by persons who are experts in these particular things, accumulating such facts and deriving such knowledge as will enable the people of the communities to put them into operation for themselves and take advantage of every natural opportunity. As rapidly as possible special studies should be made of the schools, roads, markets and other parts of the rural communities.

The committee desires to reiterate what it said in its report a year ago, that " The farmer himself is the fundamental consideration," in the development of our agricultural resources. There is no business in the world in which the character, capacity, the energy and intelligence of the individual does not play an important part, and this is just as true of agriculture as it is in any other line of business. It is also true that the better the individual is equipped with knowledge of the conditions which confront him, the better is his chance of success, and a knowledge of the best way to secure the greatest results from the material at his command is an important factor in the successful development of any business. This knowledge can be secured in many ways, but without it the farmer or the business man is without a very important factor in the successful conduct of his work.

The committee has corresponded with a number of persons, with a view of obtaining specific information as to the results which have followed the treatment of farm problems based upon improved methods of work, and desires to submit the following statements which have come to it from various sources. As in some instances the writers may not have been aware that it was intended to make public their reports, the names of individuals are in each instance withheld. Some of these statements are extracted from reports submitted to the different New York State schools of agriculture.

1. With the intention of demonstrating that the abandoned orchards of Allegany and adjacent counties might be made a valuable asset to the farm, the school has, during the past three years, given attention to the renovating of old orchards. A specific orchard, containing eighty trees and bearing practically no fruit for a number of years has, by pruning, spraying and cultivation, been made to net over two hundred dollars per year for the past two years. Through the influence of the school a crusade of spraying has been started with excellent results. At the first annual fruit exhibit, held at the school in November, 1911, the apples shown demonstrated that Allegany County can grow excellent fruit.

2. There are twelve herds which have been in our cow testing association for the three years that it has been running. The average profit per cow in these twelve herds, after deducting the cost of feed, has been as follows: First year, $21.11; second year, $31.53; third year, $46.50. These figures take into account only the value of the product and the cost of feed, but the three years' figures are all on the same basis and it seems to us that it shows very clearly the practical value of this work to these farmers.

3. *Farm of Mr. Blank, Orange County.* Dairy farm, manufacturing high quality of milk. The average farm in this region is not in a high state of productiveness and usually much difficulty is had in the growth of legumes, including alfalfa. Mr. Blank is following the soiling system, having only about ten acres of pasture. I should say he has from sixty to eighty head of cattle and about one hundred and fifty acres of land. He has gone extensively into the practice of underdrainage, putting in his tile with great care. Much of the tile is of the vitrified type and is covered with ashes for several inches. His land is not swampy but is locally wet, due to the variation of the structure of the subsoil. He distributes his stable manure every day from the stable. He has used lime on part of his farm in quantities up to three tons per acre of caustic material, particularly in preparation for

alfalfa, and by this combination he has succeeded wonderfully in the growth of alfalfa. At the time of a field meeting at his farm some two years ago, his first cutting of alfalfa, about the first of June, was two and one-half tons per acre, and his crops in general are far above the average of the state and far beyond the average of the region.

4. The Northern New York Corn Growers' Association, which holds its annual meeting next week, has, through its efforts, demonstrated that the yellow flint corn can be profitably grown in the rich dairy regions of the northern counties. Formerly the farmers of this section were entirely dependent upon Western corn, but now many more acres are being planted to corn than ever before in those counties. The association has also taken up the matter of raising corn for ensilage and the building of silos, and has shown that this is entirely practicable and profitable for the dairy interests in that section.

5. On a farm near Geneseo, Livingston County, is an orchard of six and a half acres which had rented in connection with the farm for twenty-five dollars, a total of ten acres including this orchard. It was taken over by Mr. F., pruned, and sprayed, but not cultivated the first year, and the returns have been as follows: First year, $900; second year, $630; third year, $1,320; fourth year, $1,340; fifth year, $1,280. This land has netted sixty dollars per acre annually. More recently the orchard has been thinned and the soil has been thoroughly cultivated and fertilized.

6. Mr. M.'s farm has been frequently pointed out as an example of results to be obtained from good management, and I think it may very well be cited in this connection. He has about ten miles of tile which have been laid on fifty-seven acres. His general rotation is potatoes, wheat and clover. The clover is allowed to stand one year and usually the second crop is turned under. More recently he has followed the practice of mixing alfalfa with his clover so that his land has become thoroughly inoculated, with the view that the clover may be let stand more than one year, thus making a saving in seed, with a larger net result in soil improvement. He is also using fertilizers intensively and the best kind of tillage. His plowing is deep and thorough and his hoed crops thoroughly tilled. The net results might be indicated by a transition from a condition of more than two thousand dollars' indebtedness in 1896 to fair financial independence ten years later.

On Mr. M.'s farm was an orchard of two hundred trees, of full normal growth at the beginning of the periods mentioned below. During the five-year period before any special care was given to these trees they averaged 124 barrels of apples per year, which brought an average of $151.32. During the five-year period after he had taken up improved methods they averaged 456 barrels, and the average income was $1,139.77.

7. Mr. E. in 1909 selected one bushel of seed potatoes from the bin and planted them beside one bushel just as found in the bin. His bushel of selected potatoes yielded twenty and three-quarters bushels, while the unselected bushel grew only twelve bushels.

8. Mr. S. planted two plots of one acre each to oats. On one plot he put four hundred pounds of lime, on the other none. When the yields were threshed the limed plot produced thirty-seven per cent. more grain than the other, besides having a better growth of clover plants for next year's meadow. He also tried feeding concentrates to a herd of twenty-five milch cows, be-

ginning August 2, instead of September 2, as had been practiced the previous year. Dairymen in his neighborhood did not believe it paid to begin feeding milch cows grain or fodder before the middle of September. From August 2 to December 1, 1909, the receipts from milk sold at the creamery were three hundred dollars more than during the same period the previous year.

9. Mr. W. began feeding balanced rations and soiling crops to a herd of nine cows and during the first year he increased the gross income per cow from eighty dollars to one hundred dollars, with milk at the same price.

10. Driving through the apple districts of the state where the tilled, sprayed and well cared for orchard was the exception a few years ago, now it is the rule. This impressed one greatly in a trip by automobile through Ontario, Wayne, Monroe and Orleans counties last August. Formerly little care was given to farm manure; now it is being hauled out daily from the stables or kept in covered sheds. In a seven-mile drive in Lewis and Oneida counties only two farms were seen where this was not being done, and in each case the cows had water either in the stable or convenient in the yard. Eleven years ago I do not remember that there were more than two or three so doing. There has been a great improvement in the farm stock. More pure-bred males and many more pure-bred flocks and herds, with a greatly increased production in both those and grades, now exist. Stables are more comfortable and sanitary. Recently in a twenty-mile ride through western Washington County nearly every farm had a silo. I was told most of them had been put up within the last two years. The improvement in poultry alone along all lines has been tremendous. Formerly it was difficult to find a man who knew the difference between nitrogen, phosphoric acid and potash; now these terms are on every tongue. Many are buying chemicals. This has been furthered by the course of certain large concerns selling direct to the farmer. An era of liming has come. A man in Washington County recently stated that, as a result of an institute lecture course in his town two years ago, he had drained an heretofore worthless field and last year had on it one hundred bushels of corn to the acre. Many fields have been similarly treated. Much alfalfa has been planted. Samples of seed are being sent to the experiment stations for examination and many are testing their own for germination. These are simply indications. Better than all a higher type of manhood is being developed, greater respect for the calling, higher ideals of citizenship. Various agencies have contributed to this result, such as the agricultural schools, the experiment stations, the farmers' institutes, the Grange, the Department of Agriculture, as well as the various associations, the horticultural societies, dairymen's and breeders' associations, and the like. Perhaps the most potent influence is the example of individuals who have attained success by following scientific principles. In passing through the hop sections last summer, it was noted that the yards were being sprayed with some powder. Inquiry brought out the fact that it was sulphur. The vines had been attacked by a fungus; the growers had appealed to the experiment station; the experts had investigated and in the main succeeded in saving the crop.

The committee recognizes the fact that to make farming attractive to the ablest young men in the community, it must be possible to insure a reasonable degree of financial success, and the committee believes that everything which can be done to aid in the careful and intelligent study of the very serious problems confronting the farmer should be undertaken by individuals and associations. That there is a recognition of the direct bearing upon profits of the intelligent doing of work on the farm admits of no doubt. With the further development of our farms along these intelligent lines, the committee believes that New York will still further advance to that high position belonging to it, as an example of the splendid results following intelligent effort and hard work.

It may be recalled that a year ago this committee submitted a report laying down certain fundamental principles which met with the approval of the society at that time, and which is certainly worthy of repetition. It is that the farmer himself is the fundamental factor. From whatever standpoint you look at the question of the development of our agricultural resources, this is true. If you look at it from the standpoint of what it is most important for this state or country to produce, the answer is "a good man." Anything that helps to make the man who grows up on the farm a better type of American manhood is in the direct direction of developing our agricultural resources. On the other hand, if you look at it from the standpoint of what we are going to get out of the soil in dollars and cents, you come back to the same proposition, that man is the fundamental factor. We know perfectly well that the man who has the force of character and the ability to do his work well is the man who is going to succeed in any line of work, and that is especially true of the farm.

I should like to digress for one moment on a subject which is not included in the report, and for what I say the committee is not responsible. For some time past I have been a member of the State Commission in Lunacy, and that commission is charged with the sad work of supervising the condition of some thirty-two thousand unfortunate people whose minds are not what they should be. Fifty per cent. of those patients are there for purely preventable causes, and it is stated that over fifteen per cent. of those patients are there as the result of the use of alcohol. This is no place for an extended discussion of the question of the relation of alcohol to the community, but, as I am one of the men charged with the care of these people, it seems to me entirely proper to call your attention to the fact that we want the men to grow up with that power of self-control and self-restraint which is going to save them from the evil consequences of all the different bad or unfortunate habits which may destroy their health or impair their usefulness.

MR. SCHRIVER: What proportion of the people in these institutions come from farmers' homes?

MR. SANGER: Our statistics do not permit of a definite answer to that question, but in our statistics prepared for the year 1909–10, the state was divided into three large areas of population. The first was the borough of Manhattan, the next was cities of twenty-five thousand and over, and the third was the balance of the state. The borough of Manhattan contributed thirty and one-third per cent. of the state population and thirty-eight per cent. of the total first admissions. The cities of twenty-five thousand and over contributed thirty-five and one-tenth per cent. of the total population of the state and supplied thirty-four per cent. of the total first admissions. The remaining part of the state supplied thirty-four and six-tenths per cent. of the state's total population and only twenty-eight per cent. of the total first admissions.

So you will see from those statistics that there is a lower percentage of insanity in the small cities, villages and in the country, than in any other part of the state.

THE VICE-PRESIDENT: The next is a paper by H. R. Talmadge, president of the Long Island Potato Exchange, Riverhead, L. I.

BENEFITS OF THE LONG ISLAND POTATO EXCHANGE

H. R. TALMADGE

A little over one month ago a bill was introduced in the House of Representatives which would require all contract work done for the government to be done by laborers working not more than eight hours per day, and that bill passed the house without one dissenting vote. I do not believe for one minute that all of our congressmen were in favor of that measure, but *organized* labor — mark the word "organized" — stands ready to retire to private life any who vote against their demands. This is, of course, the same congress that passed the reciprocity bill last summer which proposed to put everything the farmer raised on the free list.

There is no reason for my being here except that our experience along the line of cooperation may be of some value to our fellow farmers throughout the state and that is the single idea I had in view when preparing this brief account of the need, object and methods of our organization.

Long Island is shaped like a fish with its tail to the east. It is about one hundred and twenty-five miles long and twelve miles wide and has a population of two million ninety-eight thousand four hundred and sixty-one, the majority of whom live within the boundaries of Greater New York. The east end is divided by Peconic River and Peconic Bay, making the two points of the fish's tail. The potato-shipping section is practically confined to the two points or flukes of the fish's tail and it is here that the Long Island Potato Exchange operates. The soil is a sandy loam, called "sassafras stony loam" by the soil survey, naturally well drained and is an ideal soil for raising potatoes. Farm land is worth $250 to $300 per acre. The farmers are prosperous. Our annual crop of potatoes is from two to three million bushels. Under the present methods of farming we have nearly reached the limit of production, about one-half of all the cultivated land being in potatoes each year.

In order that you may have a better idea of the situation and what the exchange had to encounter, I will briefly explain the marketing situation. Long Island potatoes are the best potatoes grown, if the price we receive for them in the market is an indication of quality, as our potatoes are always quoted and sold in the New York City and Brooklyn markets at from twenty-five cents to one dollar per barrel more than any other potatoes. For this reason, and the additional reason that we have to add freight of twenty cents per barrel when we go beyond this market, our outlet is practically limited to the city of Brooklyn. The large wholesale firms in the city of Brooklyn number less than ten, so you see we have a very narrow market.

Our potatoes were marketed through local buyers, there being from one to four at each shipping point. The local buyer is supposed to buy and load the potatoes for three cents per bushel, and it makes no difference to him whether the price be twenty-five cents or one dollar per bushel; he gets his three cents just the same. In addition to this, many times when the local buyer received orders to buy at an advance price he bought at the old price and pocketed the difference. They seldom raised the price except when they were forced to by the grower refusing to cart without an advance.

Each local buyer received his orders and what market conditions he could gather by wire and usually he had no means of knowing the condition of the market any better than the farmer. The farmers, as well as other people, are more anxious to sell on a falling market, fearing they may have to take a lower price later on. This knowledge of human nature was repeatedly taken advantage of by the local buyers and city wholesalers, so the market price of potatoes fluctuated constantly and considerably, the larger part of the potatoes being sold by the farmers when the price was falling and the market slack. After the wholesaler had loaded up at the low price he would advance the price five cents per bushel and circulate rumors that the market was firm and prices would be higher and stop the farmers from carting, actually making the price higher in the city market, and then he would unload his large holdings of potatoes at a big profit. Then he would repeat the performance. Some of the farmers discovered this game after a time and profited by it. There was no one looking out for the farmer's interest, who was in touch with all the shipping points and knew what was going on and could advise the growers as to the true condition of the markets.

It was to remedy this condition and others equally as bad that some of our farmers determined in the spring of 1908 to form an organization for selling our produce and buying our supplies. We had had a plain demonstration of the advantage of cooperation by the wonderful success of the cauliflower association of which you have heard. We called a general meeting at which a committee was appointed to hold meetings at every shipping point in our territory and explain what we hoped to accomplish and the proposed method of operation. In our plan we set forth several specific objects:

1. Establish conditions whereby anyone desiring may buy Long Island produce true to name. The need of this is apparent when I tell you that the Long Island potato, like every other extra good article, has to compete with a lot of counterfeits sold as the genuine. There is no doubt but that there are more Maine, Michigan and New York State potatoes sold each year in Greater New York as Long Island potatoes than are raised on Long Island. Of course, so many inferior potatoes being sold for the genuine hurts our market.

2. Develop our present markets and find new ones for all our products. By judicious advertising we were sure we could increase the demand for our products.

3. Ascertain the condition of growing crops throughout the season and furnish this information to our members.

4. Secure pure seed at as low a price as is consistent with the best quality.

5. Buy and sell or manufacture all kinds of supplies.

6. Buy and sell and consign all kinds of farm produce and establish uniform grades of the same. Better grading would almost always net the grower more money.

7. Own or lease and operate storage warehouses and packing houses for produce.

8. Arrange for the transportation and handling of all produce in the best possible manner.

9. Eliminate from the list of our customers those wholesale dealers who unjustly dock the shippers on weight or who make a practice of turning down cars of produce on a falling market.

Our Long Island potatoes being a special high-grade product of limited production, by placing the entire crop in the hands of one selling agent, that agent would know just the requirements of the market and could regulate the supplies to a certain extent, and prevent the flimflam methods by which the grower was fooled into selling the greater part of his crop at the low spots in the marketing season. The selling agent could keep the price right up to the top the market would stand and prevent it from going too high, for there is such a thing as getting the price so high as to be an injury to the grower. This state of affairs not infrequently happens. A good example was furnished a year ago last summer.

The price of potatoes started in at forty cents per bushel and rapidly went to seventy-five cents, when it should have stopped at sixty-five cents. When the price went to seventy-five cents per bushel many of our customers turned to other sources for their supplies of potatoes. After they had once left, we could not induce them to come back, because they were able to make a larger margin of profit on potatoes from other sections. As a result, our market was very slow all the rest of the season at sixty cents per bushel.

Again, during the summer of 1902 with favorable local conditions we raised one of the largest crops of potatoes we have ever harvested, while the rest of the East had a serious shortage during the late summer and early fall. With a big crop to harvest and no reliable information of conditions elsewhere, we were anxious to sell and the price soon dropped to twenty-five cents per bushel for as good potatoes as ever grew. When we farmers would not cart as fast as the local buyers wanted them, they would tell us that they had to go to twenty cents per bushel, but we could cart two or three loads more at twenty-five cents. They kept the price at twenty-five cents till the crop was nearly harvested, when, during the first week in September, the price went to fifty-five cents per bushel, and it was but a short time before it was seventy-five cents per bushel. After the price had gone up, one buyer told us that they could have paid fifty-five cents per bushel all the time, just as well as not. Many dealers made fortunes out of the Long Island farmers that fall.

Many schemes were worked for all they were worth to break up the exchange but I am glad to be able to say that our loyal members saw the selfish motive that prompted these actions and stood by the exchange. The local buyers are unanimous in saying that since our exchange started they have made no money and much the same story comes from the wholesaler in the city. Our exchange is more firmly established and the wholesalers are learning that we stand for better grading and a square deal for all and that the chance for a legitimate profit is better than before the advent of the exchange. Since we started, the markets have been very steady and uniform, any fluctuations which have occurred being caused by the general market condition. It is impossible to estimate the thousands of dollars this result of the presence of the exchange has put into the farmers' pockets.

Our manager has tried to keep posted, so he could inform our members as to the condition of the potato crop in other sections that come into competition with us.

Before our exchange started the price of paris green varied from twenty-five cents to thirty-five cents per pound, while since we have never paid over seventeen cents per pound. Besides paris green we have bought and supplied our members, at a big saving over what they used to pay, with all kinds of grain and feed, kerosene, gasoline, lime, coal, flour and many other supplies, including seeds. Working through our organization we have secured many concessions and accommodations from the railroad that, as individuals, we would not have secured. Our soil, climate and crops being different from those of the rest of the state, we needed and have secured some special work both from our state experiment station and from the Department of Agriculture, at Washington.

While in these and some other minor points the exchange has been of material benefit to its members, it is, next to marketing our potatoes, in the purchase of our fertilizer that it has been of the greatest financial benefit to our members. Our farmers, as a rule, buy at least one thousand pounds of a high-grade fertilizer per acre each year. That is, a farmer who has a fifty-acre farm will buy at least twenty-five tons of fertilizer annually. We estimate that about twenty thousand tons of fertilizer are used each year in our territory and on this amount of fertilizer there has been a saving of at least three dollars per ton, or sixty thousand dollars a year, and for the three years a total of one hundred and eighty thousand dollars. Notwithstanding all this, I am sure that among our six hundred members you could find quite a number who would say, offhand, that the Long Island Potato Exchange is of no benefit to the Long Island farmer.

If there is anyone here who is thinking of trying to start a cooperative movement among the farmers, let me tell you some of the conditions that I consider essential to the success of such a movement:

1. Fortify yourself with an unlimited supply of patience, as you will have to contend with all kinds of opposition from those you would benefit. It will take time to educate the farmers to the benefits that will come with cooperation. The farmer is the most independent of men. All through his life he has been doing his own will, taking orders from no one, and it is the hardest thing for him to join and support an organization where some one can tell him what he must do.

2. Incorporate your organization and have the price of membership at least fifty dollars. Anyone who is not interested to the extent of fifty dollars had better stay out, and it is absolutely essential that you have sufficient capital to carry on the business properly.

3. Pledge the members that they will patronize their own organization always, when possible. It is better that you have the produce of fifty members that you know you can depend on than the produce of five hundred upon whom you cannot depend.

4. When the formation of a cooperative company will displace local dealers or buyers, utilize these local buyers as your agents as far as possible.

5. Too much importance cannot be attached to the problem of engaging the services of a manager. He must be a man who will inspire confidence in the stockholders, thereby securing their support, and causing them to be loyal to each other. In addition to this, he must be a salesman of unusual ability, for he must go into the open market and overcome the prejudice existing against all farmers' movements to market their produce.

Time will not permit my entering into the subject to the extent of its importance, but I will briefly outline a plan presented at the last annual session of our exchange by our sales manager, C. E. Embree. The plan received the full endorsement of the stockholders, and by a unanimous vote the management was instructed to agitate the question, having in view the organizing of every farming community which might be called a base of supply for the markets of New York City. The organizations at the small towns or loading stations are to be the foundation of the movement and are to be called the locals. Then there are to be county organizations made up of representatives from the locals.

Next, there will be the state organization made up from representatives from the county organizations, these state organizations to be located at some central point in each of the states from which Greater New York and other market centers receive their supplies. In this way it is hoped to cooperate with the responsible dealer in the city and stop the wasteful methods now in vogue.

The State Agricultural Department of Maine, through the efforts of its energetic commissioner, Mr. J. P. Buckley, has adopted the plan as a whole and, in order to bring the question before the farmers of the state, engaged the services of Mr. Embree to speak at thirty Farmers' Institute meetings. These meetings were brought to a close on December 23 last and the results were satisfactory to such an extent that the Commissioner reengaged Mr. Embree to return to the state and hold another series of meetings in parts not visited during the previous trip and, in addition, he is to return to Aroostook County, and again labor among the potato growers. Perhaps the completion of such an organization as here outlined would not secure for us the eight-hour day, but it would go a long way toward insuring us better compensation for our long hours of toil on our farms.

There is no doubt that many of the farmers' cooperative associations are open to criticism, and there is abundant room for improvement in methods and results, but we farmers must learn to pull together, not only for our own benefit, but for the benefit of the consumer as well.

THE VICE-PRESIDENT: The next paper is by J. W. Pincus, secretary of the Federation of Jewish Farmers of America.

THE COST-OF-LIVING PROBLEM IN CONGESTED CITY DISTRICTS

J. W. PINCUS

Some time ago I received an invitation from your worthy president, the Honorable Raymond A. Pearson, to look up some facts about the prices of farm products as paid by the consumers of the congested parts of New York City, and to make some suggestions for bringing the producer and consumer closer together. I have spent several days in visiting various retail markets on the West Side, East Side, the Bronx and in Harlem, and I beg herewith to submit a table showing the prices paid by the consumer in New York City:

PRICES PAID BY NEW YORK CITY CONSUMERS AND PRICES RECEIVED BY PRODUCERS

PRODUCT	RETAIL PRICE PER POUND	CALCULATED PRICE PER BUSHEL	CALCULATED PRICE PER BARREL	CURRENT MARKET PRICE	PROFIT RECEIVED
Apples (spy)	$0 06	$2 88	$10 44	$2 50 (bbl.)	$1 80
Apples (winesap)	07	3 36	12 18	2 40 (bbl.)	1 82
Apples (greening)	07	3 36	12 18	3 00 (bbl.)	2 20
Apples (pie)	03	1 44	5 22	1 75 (bbl.)	1 20
Beets	02½	1 37	4 35	1 25 (bbl.)	80
Carrots	03	1 50	4 50 (150 lb. bag)	1 12	79
Onions	03½	1 99	3 50 (100 lb.)	2 30	1 74
Potatoes	03	1 80	5 40	3 25	2 40
Sweet potatoes	05	2 70	3 75 (hamper)	1 72 (ham.)	1 29 (ham.)
Turnips	02½	1 25	4 35	1 75 (bbl.)	1 20
Cabbage	04	80 00 (ton)	....	15 00 (ton)	12 00 (ton)

I beg to call your particular attention to the second column of this table, which shows how much these products would bring per bushel, and to the third column, which shows how much they would bring per barrel. The fourth column shows the current wholesale market price for the various vegetables, and the last column shows how much the producer actually received for his product, after deducting freight, cartage, commission, and the cost of bag or barrel or other package.

As you have noticed, I have limited myself in this inquiry to the vegetables and fruit raised in New York and other Eastern states, as I did not have sufficient time to investigate the question of dairy and poultry products. You will notice that the price paid by the consumer is anywhere from two hundred to five hundred per cent. more than the price the farmers received for the same products. The question arises, "Who gets the money, the difference between what the farmer gets and what the consumer pays?" It is very difficult to find out who really gets this money, but it seems to me that the principal trouble lies in the wrong method of distribution. To illustrate: The corner green grocer purchases his stuff from a jobber, who buys it from a wholesaler, who buys it from the commission merchant, who gets it from the farmer. In addition to the legitimate profit which each one makes, there are extra charges for cartage, etc., in each case, besides waste.

The Federation of Jewish Farmers of America, an organization composed of several thousands of Jewish farmers located principally in the states of New York, New Jersey, Connecticut, Massachusetts and Pennsylvania, at their last convention held in New York City, considered this problem, and it was decided that one way to remedy this condition is to establish markets in New York and other large cities, where the farmers can ship their products so as to eliminate some of the middlemen. During the past few years, the cry of the high cost of living has gone up all over the land, and many different suggestions have been made for remedying the same. To my mind there is no panacea for this condition, but many of the remedies suggested would be helpful Let me enumerate some of them:

1. *The Parcels Post.* The introduction of the parcels post will undoubtedly help towards solving this problem, but the parcels post alone will not solve it.

2. *Legislation.* Remedial legislation to supervise the commission merchant and to fix prices, etc., would be of great help, but I do not think that this in itself would be sufficient.

3. *Cooperation.* Cooperation among the farmers and the establishment of wholesale distributing houses in all our large cities, from which the grocerymen and retail produce dealers can buy their produce, would be of great help in equalizing prices, and would help the farmer to get a little more for his produce, and at the same time afford the city people an opportunity of getting their supplies at a little lower price.

4. *Education of the public.* The consumer must be taught that the present methods of daily purchase of half a pound to one pound of vegetables of various kinds are wasteful, and community purchasing or neighborhood purchasing would help very much towards solving the problem.

In conclusion, I beg to state that the problem of the high cost of living in the cities and the, comparatively speaking, low returns the farmer gets for his products, requires very careful, scientific investigation. It seems to me that no other branch of business requires such careful introduction of the so-called "scientific management," as advocated by Professor Taylor and Mr. Brandeis, as the proper handling and distribution of the produce from the producer to the consumer. I, therefore, beg to take the liberty of suggesting to the New York State Agricultural Society and all of the other allied organizations meeting with it to-day, that our State Agricultural College and experiment stations and our State Department of Agriculture, which have done such excellent work among the farmers of the state to promote agricultural knowledge, should now devote some attention to the solving of this problem by appointing a commission, under the management of an expert in farm economy, to make a thorough, careful, scientific investigation of all the phases of the cost of production of vegetables and other farm crops, their distribution, cold storage, and all other factors which would follow the produce from the time it leaves the farm until it reaches the consumer's table.

The meeting was then adjourned.

AFTERNOON SESSION

The meeting was called to order in the Assembly Chamber at 2 p. m., with President-Elect G. W. Sisson, Jr., in the chair.

THE PRESIDENT-ELECT: This is a joint session of the New York State Agricultural Society and the New York State Breeders' Association, and is entirely given up to topics relating to the cost of producing animal food products, a subject in which we are both equally interested as societies, and a topic which is particularly germane to the business of breeding. Before taking up the set papers, if anyone has something in mind with reference to the discussions, either in the Breeders' Association or in the Agricultural Society meetings, that he wishes to bring up at this time, we will try to find somebody here who can answer the questions.

In answer to a question, Mr. W. W. Ware, of Batavia, said that for hired help they used mostly Poles, who came out from their homes, about one mile distant, in the morning and returned at night. He said that they had no trouble in procuring all the help they needed.

MR. STARK: We are getting enough milk but not making enough on it. How can we get the middleman to divide with us and give us a fair show?

MR. GEROW: The farmer needs business principles; he also needs to realize the power he has. We, as producers of the liquid milk for the metropolitan district, have the source of supply and the market. What we now want is united action and cooperation, which is the only method I know by which we can solve the problem and receive a fair and just price for our product.

Supply and demand is always held up as the regulating factor of the price of our product, but supply and demand do not make it, and we as producers should have the right of a voice in the price of that milk.

MR. SHOENFELD: There is a human Mephisto between the producer and the consumer. A solution of the so-called problem of the increased cost of living necessitates the divorcing of Wall Street from the bread basket.

THE PRESIDENT-ELECT: We must go on with out regular program, which lies, perhaps, as near the farmer's and breeder's heart and pocketbook — I refer to the cost of producing animal food products. I believe that the farmers and the breeders owe a responsibility to the consuming public to see that their animal food products, both meat and milk, are produced as cheaply and economically as possible upon the farms, for in the end that will make for cheaper food products to the consumer, and give honest administration of its distribution.

We will take up, this afternoon, the cost of milk production, which is the first address on the program, to be delivered by Mr. Albert Manning, of Otisville.

COST OF MILK PRODUCTION

ALBERT MANNING

Our time at this meeting is so short and valuable that I do not feel like going into details as to why the question of the cost of milk production is a most complex one. The different estimates are almost as many as are the number of dairy farms; also the estimates from each farm must vary from unavoidable and sometimes unaccountable reasons. While the variation in cost of production by different producers may be only a small fraction of a cent per quart, in per cent. it appears much larger.

One of the strange results of this bookkeeping is that the producer almost invariably shows a deficit instead of a profit; still a large percentage of these milk producers are able to continue in business year after year. Is it that they overestimate the cost, or omit some item of profit? Or is it the little side issues of general farming which furnish the profit in the business? Possibly the discussion at this meeting may throw some light upon this question.

My observation has been, however, that some of the items of expense are overlooked more often than the items of profit. Many let one item of cost balance another of profit. This will most surely lead to error. Also, we often find items omitted, such as icing of milk, cartage to the station, interest and taxes on investment, special fencing necessary for the keeping of cattle; also, no inventory of the herd is taken at the close of each fiscal year.

The cost of production, as shown by the experiment stations of some of the states, is very complete in its items, but the cost is so high that the average farmer with the general market could not stay in business. In consideration of the varying conditions from year to year, and the variation in figures, in order to get a fair basis, it is necessary to take estimates of a number of practical farmers for a series of years, and from this data take an average.

In the report of the milk investigation by Attorney-General O'Malley, the average cost, as testified by producers, was 3.513 cents, and some of the carefully prepared figures show four cents or more cost. My cost on a herd of twenty cows is as follows:

Feed average per day	$0.155
Hay and pasturage	08
Interest on $60 cow	01
Interest on investment beside cows	05
Depreciation in value of cow	02
Repairs and losses	01
Labor, milking and care of cows	07
Icing	01
Cartage	02
Taxes and insurance	01
	$0 435

Value of stable litter	$0 075
Cost per cow with nothing for owner's time	036
Cost per quart at 8 quarts per cow	045
Cost per quart at 9 quarts per cow	04
Cost per quart at 9.3 quarts per cow	0388
Borden's average price, 1909	034

The average price paid for milk in the past few years by the principal dealers of New York City is three and one-third to three and one-half cents. This would show a loss to the producer of about six per cent. The dealers estimate the cost of distribution at four and one-third to four and one-half cents per quart, and one prominent dealer testified one-quarter cent per quart as a reasonable profit on their investment. It would, therefore, be necessary for the dealer to add about four and three-quarters cents to the cost of the milk delivered to him in establishing a price to the consumer.

Now, where does the farmer get his support? Some may have the large-production cow, or thoroughbred cattle, and reap a profit from the sale of these cattle, but a large percentage of them exist by putting a low estimate upon their labor. The father, with the help of his sons and, in some instances, the mother and daughters, in driving the cattle to and from pasture, and otherwise assisting in the care of the dairy, receives no remuneration for this labor, and it is not included in the items of cost. Some answer this question by calling milk a by-product of the farm, but there are thousands of farms where milk is practically the only product, where milk is king.

Some give the fatherly advice to get the high-production cow; good advice, it must be admitted, if one has the capital to buy them and can find them. I venture to say, however, that there are not enough eight-thousand-pound cows to supply the demand for milk. If the milk from cows under eight thousand pounds were stopped to-day, there would be a milk famine to-morrow. We must, therefore, accept conditions as we find them. The average per cow is being gradually increased, but the cost of production more than keeps pace with the improvement of the herd. The milk producer often pays more for a ton of feed than he receives for a ton of milk.

How to place milk production upon a profitable basis has become a burning question. The consumer feels he cannot afford to pay more, although the nutritive value may be greater than in other common articles of diet which he can purchase for the same amount of money. The distribution of milk in the large cities is centered in a few large dealers, who claim they cannot afford to pay more to the producer. If the producer fails to continue upon the basis of the present price, there will be confusion in the craft. Sometimes it appears as though it would take only a spark to cause the greatest confusion the milk business has ever known. How can the conflict be avoided? If the varying interests will not come together in a spirit of fairness, if the laws of the country will not allow them to come together, could there not be established a fair commission of arbitration? Dealers fear both a shortage and a surplus; these now are items of expense, and they buy largely upon the basis of a surplus market. If the producer were required to take care of the surplus, or to share the loss, if any, with the dealer in manufacturing the surplus, would it not act as a governor does to a steam engine? It would check the overzealous from overproducing and surplusing the market when the price showed a fair margin of profit on each quart of milk produced.

Milk is about the only article of diet that is not bought from the producer according to quality. If the farmer packs No. 1 and No. 2 apples together in the same barrel, he will receive No. 2 price for all. If the receiving station will pay a price according to the grade of milk it receives, there will be an incentive to the producer to improve that grade, and the producers are ready and willing to do it. It will not need a large staff of inspectors, impractical and ignorant of the first principles of dairying, to coerce them into producing an article at a price out of proportion to the cost of production. It is these conditions which have caused milk producers to become sour and unwilling to cooperate in improving the conditions. There are many farmers making an honest effort to produce a sanitary, wholesome milk; but at the receiving station the good, medium and poor are all mixed together, and all receive the price for the lowest grade.

It is easy for health authorities to write on paper certain grades of milk which they think the consumer should buy, but it may not be so easy to get those grades at a popular price, nor to compel the people to buy them after they get the grades. If the grades of milk are too high, it will result in decreased consumption, a surplus market and financial loss to all concerned. I recently saw a statement that there were only one hundred dairies in the United States producing certified milk, so you can understand that if we all produced certified milk we could not sell it for the cost of production.

Cleanliness should be the main basis for establishing the grade of milk. The butter fat contents may be taken as one of the factors, where the milk is used for manufacturing purposes, but for the liquid market, cleanliness and wholesomeness, which can be determined by the test for bacteria. Here is opened up another field for the cow testing association. When the consumer realizes he should pay for milk according to its nutritive value and its sanitary grade, the farmers will need these associations to test the milk for bacteria, as well as for butter fats, to insure them against imposition or from the purchaser taking advantage of their personal inability to make these tests for themselves.

THE PRESIDENT-ELECT: Mr. Homer H. Jones, of Homer, will now speak on the same subject.

COST OF MILK PRODUCTION

HOMER H. JONES

The cost of the production of milk is a problem which necessarily confronts many farmers of this state. We, who produce milk, produce it for the net returns or profits we obtain from its production, and, as the price we obtain is nearly a fixed one, the profit we are to receive depends a great deal on the cost to produce the milk. It requires the milk from nearly six hundred thousand cows to supply the needs of New York City alone, besides all the other large cities and villages of the state. So the cost of keeping these cows is of vital importance to the farmers of this state.

This is an unusually expensive year to feed stock. We have little but coarse timothy hay, because of the late freezes last spring, which killed most of the clover, and the severe heat of July, which ripened and dried up much of the rest before we could cut it. Along with this, the concentrated feeds we buy are all very high.

Twelve years ago I purchased my first supply of feed for cows as a farmer for myself; one ton of wheat bran; one ton of corn meal; one ton of gluten feed. I paid fifty-one dollars for the three tons. To-day the same supply would cost at least ninety dollars. I bought hay in the mow at ten dollars per ton; to-day it is eighteen dollars per ton. Milk that December brought one dollar and fourteen cents per can, this December, one dollar and sixty cents. So we can readily see that milk has not advanced in price in the past twelve years as the price of feed has. Also, we are expected to have our farms equipped with all the modern conveniences, and the score card, which the Board of Health of New York City furnishes their inspectors, calls for methods and equipment which we find where certified milk is produced.

A very common ration with many farmers this winter we shall presume is as follows:

Timothy hay	12 pounds	Dried distillers' grains	2 pounds
Corn silage	20 pounds	Corn meal	2 pounds
Wheat feed	5 pounds	Oil meal	1 pound
Gluten feed	2 pounds		

This gives us a total of twenty-five pounds dry matter; protein, two and five-eighths pounds; and carbohydrates, sixteen pounds; a very well balanced ration of one to six. But let us look at the cost:

Hay, 12 pounds, at $18 per ton	$0 108
Silage, 20 pounds, at $5 per ton	05
12 pounds of grain at not less than an average of $30 per ton	18
Total	$0 338

This represents the cost of keeping a cow per day, or ten dollars per month for the feed of a cow in full flow of milk. Naturally, though, when our cow advances in her period of lactation, we reduce the grain ration, and the summer months with their pasture and other green feeds lessen the cost per month for a part of the year. But it takes close figures to bring the cost for the feed per cow, at present prices, to less than ninety dollars per year, for a cow that freshens in late fall or early winter.

For an example, we will take a dairy of forty cows and see what the other expenses are beside the feed:

Manual labor for care of cows	$800 00
Delivery of milk	200 00
Interest at 6% on value of forty cows, $3000	180 00
Interest and necessary repairs on barn not less than	200 00
Shrinkage in value, loss on cows per year	200 00
Feed at $90 per cow	3300 00
Total	$5180 00
Average per cow	$129 50

We realize this is a large expense per cow. How are we to lessen it?

First, if we had either alfalfa or clover hay in the place of timothy hay, we could leave out three pounds of wheat feed in our daily ration and still have as much protein as we had with the timothy hay, which would lessen the cost per cow at least four cents per day, so we must work for clover and alfalfa hay. If we had thirty or forty pounds of silage per cow instead of twenty, we could lessen the hay ration and have a better and more succulent ration, and one nearer the ideal one for milk production. In this way we can, by raising more corn and keeping up a rotation of farm crops and clover, get along with less old meadows. By so doing, the cost of keeping a cow per year might be reduced to one hundred and fifteen dollars or one hundred and twenty dollars per year, at the present prices of feed. We do not claim that it costs every farmer that much per cow, but he cannot shade it much at present prices and keep the cow doing her best. This is a roughly estimated cost of keeping a cow a year, and the cost of producing the milk per quart will depend largely upon the amount of milk our cows will produce, whether it is three thousand or fifteen thousand pounds per cow yearly. Our milk in this section has brought us very close to three cents a quart on an average for the year, of late. Therefore, a cow has to produce eight thousand five hundred pounds of milk per year to pay the bare cost of keeping, before any returns or profits may be realized.

Another problem which enters into the profit of milk production is: Are we getting just returns for the milk we produce? The fact that we do not, I believe, is proven by the fact that the population of our agricultural districts where the production of milk is the chief source of income has been on the decline for the past ten years. Especially our hill farms, or the ones remote from the market, have been on the decline, which goes to show that milk production has not always been a paying one.

As has been already stated, we, in our equipment and methods, have been expected, to quite an extent, to produce a milk nearly on par with certified milk. The man who has lived up to the conditions required by the Board of Health of New York City has received no more for his milk than the man who produces milk poor and almost unfit for use, but manages, from year to year, to keep on the good side of the shipper.

A few years ago one of our eminent doctors of New York began to look at conditions as they existed between the producer and consumer of milk. He realized that if milk could be made of a uniform quality, and put on the market in a more healthful condition, it would be of much more value to the consumer. He realized that clean, wholesome milk would prevent much sickness and death, especially of infants in our great cities. He also believed that the farmer would produce and deliver such milk, if he received the proper compensation. He formed a stock company which was incorporated and known as the New York Dairy Demonstration Company (Dr. North's system). Two years ago this company purchased an ideal shipping station at Homer, Cortland County. After installing expensive machinery, they proceeded on a small scale to handle what is known as inspected milk, which differs from certified milk only in that the certified milk has to be bottled on the premises where produced, and inspected milk does not. We were asked to have our dairies tested for tuberculosis. The milk was to contain at least three and a half per cent. butter fat, and the night's milk was to be delivered at a temperature of 55 degrees F. We were furnished with small-top milk pails and the milk as delivered was to contain a bacteria test not exceeding ten thousand to the cubic centimeter. For this extra work they paid the producer one cent per quart above the average price paid by the surrounding stations.

For some time the farmers were a little sceptical and slow to have their dairies tested, but soon found that the test was not all a farce. As the demand for their milk increased, additional dairies were tested, until at present one hundred and fifty cans of tested and over one hundred cans of untested milk are handled daily. The company is about to furnish the Board of Health of New York City with upwards of five thousand quarts daily, mostly of tested milk, but part pasteurized which, with their present output, will be about seven or eight thousand quarts of bottled milk daily.

Great care is used in handling the milk at the shipping station. The equipment is the best. Upon delivery, the milk is sampled both for butter fat and bacteria and also tested again for bacteria as it goes into the car and again upon its arrival in New York. The milk cans and pails used by the farmers are all thoroughly washed, steamed and dried at the creamery and the farmers do all in their power to have the milk in the best condition possible when delivered. Often the bacteria test will show individual tests of two hundred bacteria to the cubic centimeter, and have averaged less than one thousand daily for a month for the most particular dairymen.

It would be difficult to figure very closely as to the additional expense of producing this inspected milk. We receive twenty cents per can for having our dairies tested. The test has proven a very expensive ordeal for some of us. A farmer seldom fails to lose five cows out of forty at the first test, and some have lost the whole dairy and been obliged to buy a new herd and test again. The state authorities have been very liberal with us in sharing the loss on condemned stock, but I have known of cases where the farmer lost over one thousand dollars on a large dairy. We are not allowed to buy untested cows and put them in our herds. So when we wish to replenish our dairies we either have to pay an extra price for a tested cow or else get a number together and have them tested, taking the good cows home with us and keeping the condemned ones in some out-of-the-way place till they can be appraised and slaughtered, which in some cases takes from four to six weeks. So we are not sure that it does not cost us nearly the additional twenty cents per can to produce a three and a half per cent. butter fat milk, and keep our cows tested.

We receive ten cents per can for milking in small-top pails. We find it takes a little longer and we have to pay close attention to our work, but we cannot produce sanitary milk without using a sanitary pail. We also receive ten cents per can for keeping our bacteria count below ten thousand to the cubic centimeter. To obtain this we are obliged to have well-lighted and ventilated stables, to keep our cows in a good, healthy condition, to keep them clean, and to do all feeding after milking. Most of us find it practical to use a dampened cloth to remove all dust from the cows' sides and udders before milking, also to cool the night's milk to 50 degrees F. within a short time after milking, which requires putting up a liberal amount of ice. While any one of these details does not require much extra time, to do everything right may readily take the time of one extra man in a large dairy of forty or fifty cows. Along with the extra work we find a satisfaction that we are placing on the market a good, wholesome and healthful milk which is safe to use, and we are proud to recommend.

The real net profit of producing this grade of milk depends somewhat on the outlay we would individually have to make, how much it would cost to procure ice and how much extra help we would be obliged to keep in order to conform to the regulations and deliver the milk not later than eight-thirty in the morning. I feel, from my little experience of one year, that the production of this grade of milk under the present prices and conditions is a fair compensation for our extra work and expense.

In closing these remarks on the cost of the production of milk, I wish to say that I have found, from close observation and experience, that in order not to have the cost exceed returns there are certain rules that have to be followed carefully:

1. We must keep good cows, cows which will respond to care and feed.
2. We must give these cows plenty of good, wholesome food all times of the year, which must be produced and bought at a reasonable price.
3. We must have well-lighted and well-ventilated stables.
4. All who have anything to do with the dairy must be interested in its welfare.
5. Last, but not least, the man at the wheel must have a liking and preparation for the work, must have good judgment and plenty of energy, and not be afraid to use them if he expects to succeed.

THE PRESIDENT-ELECT: We will next hear from Mr. H. O. Palen, of Highland.

COST OF PRODUCING POULTRY AND EGGS

H. O. PALEN

The magnitude and importance of the poultry industry of the United States has only recently been seriously taken note of. The humble, despised hen, whose care and comfort have been somewhat disdainfully left by the average farmer to the women has, on most farms, to "scratch for her living," in a most literal way, during the greater part of the year. Notwithstanding this neglect, she has gone right along scratching and cackling her way to the front, until the latest census reports will show her and her products towering above all other farm products in value, save only corn and cotton. It is now estimated by prominent poultrymen that her products for 1912 will total the astounding sum of one billion dollars. If she can produce results like this when treated as a mere side issue, what may she not do when she gets attention from the farmer commensurate with her importance?

In my own poultry business I keep a thoroughbred flock from which I sell breeding stock and eggs for hatching and also a commercial laying flock of unmated hens from which I supply sterile eggs to a select trade. As I have not kept separate accounts with these two departments on feed bills, I found it quite puzzling to arrive at exact conclusions as to the cost of producing the commercial eggs. However, taking the figures of a considerable number of poultrymen as to costs under various conditions, I am sure that the following calculation is well within the net result that can be realized by the farmer who will give reasonable care and attention to a flock of, say, one hundred or more hens of average quality:

Cost of rearing pullets to laying age	$0 50	
Cost of labor and feed for laying period of ten months	1 25	
Market value of 100 eggs at 24 cents per dozen		$2 00
Value of 10 chicks hatched, at 10 cents each		1 00
Value of hen at end of laying period for market, or table		75
Net profit	2 00	
Total	$3 75	$3 75

A little extra care and special attention to feeding a proper egg ration will increase the product at least twenty-five per cent., making a net result of two dollars and fifty cents per hen. The fertilizer by-product, based on Cornell figures, will fully cover overhead expense, interest on investment, taxes, etc. During the past year the average price of eggs in this state has been higher than twenty-four cents per dozen, so that my figures are under the possibilities. The Corning Egg Book, which was extensively advertised about two years ago, claimed a profit of six dollars and forty-one cents per hen on a flock of about two thousand hens kept under what might be termed an intensive system. The farmer who will give the same care and attention to poultry that he must give to any other department of farm production to win success, can produce both poultry and eggs at the minimum cost, and is, therefore, sure to profit by extra effort to increase his income from this source. Of all the avenues open to the farmer to better his condition with little additional capital and labor, nothing offers the sure increase of income that poultry does. All this is based upon the ordinary scrub hen. Now let us suppose that he gets the real "hen fever," so that he will keep better stock and the vista widens perceptibly. Professor Rice, of the Department of Poultry Husbandry at the New York State College of Agriculture at Cornell University, in an article contributed to *The Cornell Countryman*, for December, 1911, shows a net profit from one hen of five dollars and six cents, after charging her with two dollars and sixty-six cents for feed, labor and interest on investment. Eggs sold at thirty-five cents per dozen.

New York, by the last census reports, now stands fifth among the states in the value of its poultry. It ought to stand first for at least two excellent reasons: In the first place, our soil and water resources in the way of running springs and brooks furnish natural conditions for successful poultry culture far superior to such states as Iowa and Missouri that now leave us far behind. Secondly, our nearness to the high-priced markets for poultry and eggs gives us an indisputable advantage. The average value per fowl given for Iowa is fifty-two cents, while New York's is seventy-four cents. Yet with these manifest advantages, Iowa's poultry outnumbers New York's by more than one hundred and twenty-five per cent. The average number of fowls per farm on the 193,141 farms reporting in our state in 1910 was only 55 and a fraction, while Iowa's 204,635 farms reporting turned in a chicken census averaging 115 fowls to the farm. Now, let us suppose that these 193,141 farms in our state were to increase their stock of fowls 60 each the coming year. Based on the values given in the 1910 census reports (and prices are now higher for both poultry and eggs than then) the increased product, to say nothing of the eggs that would follow, would amount to the snug sum of more than eight and a half millions of dollars. The value of the fertilizer by-product, based upon Professor Rice's figures at Cornell, would add to this upwards of three and a quarter millions of dollars more. Assuming that one-half of these extra chickens raised would be pullets, and estimating their egg yield at only one hundred eggs each for the year, the value of the extra egg production at only twenty-four cents per dozen, which is considerably under the average wholesale price for last year, would be over eleven and a half millions of dollars, making a grand total of more than twenty-three millions of dollars. Deducting the cost of feeding them through their laying period at one dollar and twenty-five cents per head, seven and a quarter million dollars, we have left about sixteen millions of dollars net profit as the result of the effort, or an extra net dividend of about one hundred dollars per farm.

A single county, Sonoma, in the state of California, marketed in 1910 nearly one-fourth as many dozen eggs as the entire state of New York. Sonoma County marketed eleven million dozen, and New York, forty-eight million seventy-four thousand four hundred and eighty-one dozen. Of course, egg farming is done there on the intensive plan, but the comparison offers food for serious thought.

In conclusion, I beg to call attention to the fact that the meat supply of this country can never again be furnished at the prices made possible by free range for cattle and sheep which is now gone forever. Therefore the enhanced prices of poultry and eggs that enter into our latest nightmare, the high cost of living, are sure to continue to the advantage of the farmer who is wise enough to see his opportunity.

The president-elect introduced Honorable Calvin J. Huson, of Penn Yan, who spoke briefly and informally on the "Cost of Pork Production."

THE PRESIDENT-ELECT: We now approach one of the most important topics of the afternoon, and one that, in the manner in which it will be presented, will give you ample food for thought. C. S. Plumb, professor of animal husbandry, Ohio State University, Columbus, Ohio, will now address us.

THE COST OF MUTTON PRODUCTION

C. S. PLUMB

No more unpopular time could be selected than this opening month of 1912, to discuss the subject of the cost of mutton production. The present day finds our shepherds facing the lowest prices for sheep and wool, as compared with the cost of living, probably known in the history of this country. True, lower prices have prevailed, but in no time since 1865 have the American people paid such high prices for the necessities, letting alone the luxuries. During the past year, more sheep were received at the Chicago Union Stockyards than in any previous year, the total being 5,736,244, an average of 15,716 head daily. The markets have been glutted and sheep men have offered their flocks at minimum prices. In September, I was offered beautiful wethers at $2.75 a hundred, and I was told I could buy fine breeding ewes in that section of western Pennsylvania for $2.50. Rumor passed it about that men were offering their flocks at $1 per head in some places in the Ohio River country. Thus it occurs that this must of necessity be an unpopular time to talk of feeding sheep.

The thoughtful man, however, will incline to the opinion that this is a most excellent time to buy and get ready to load up on a class of stock that is absolutely sure to return to better and profitable prices. All classes of farm animals go through periods of prosperity and then decline in values, and the sheep is at present having its innings on the decline.

There are various arguments in favor of the keeping of sheep, but the best one is, because a man loves them and enjoys their company. All other arguments should be subordinate to this one. No animals respond more readily to gentle, sympathetic treatment than do sheep.

The cost of mutton production has been more or less satisfactorily solved by two classes of persons, viz., the experimental feeder at the agricultural station, and the practical feeder on his own farm. The station investigator has no prejudices in the matter, and analyzes the various factors in his experiment with the view of securing and interpreting the results as intelligently as possible. The farmer engaged in feeding sheep may secure most gratifying results in production, but is inclined to assume that the cost is less than it really is. However, valuable lessons are secured from each source, consequently it is my purpose to present evidence gathered from both station and farm.

American experiment stations have done comparatively little feeding of sheep. New Hampshire, New York, Ohio, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, South Dakota, Nebraska, Colorado, Wyoming and Montana have all reported more or less experimental feeding of sheep and lambs. Some of these experiments have a direct bearing on the subject of cost, and may appropriately be discussed here.

A study in the cost of fattening range lambs, in which clover and corn were the principal feeds, was made in 1905-6 by the Ohio Experiment Station, under the direction of Mr. B. E. Carmichael. There were fed one hundred and seventy-six Western wethers and ewes for a period of sixteen weeks. These were divided into four lots, each receiving clover hay and corn, but lot 1 was fed one part linseed oil meal to five parts corn; lot 2 was fed stock food with the corn; and lot 3 had about one-sixth more corn than lot 4. The following table shows the important features of this experiment:

LOT	RATION	POUNDS FEED CONSUMED 100 POUNDS GAIN				TOTAL GAIN	AVERAGE DAILY GAIN PER HEAD	COST PER POUND GAIN, CENTS
		CLOVER	CORN	OIL MEAL* OR STOCK FOOD†	TOTAL			
1	Clover, corn, oil meal.	502.10	395.90	77.04*	975.04	1,161.7	.236	7.07
2	Clover, corn, stock food............	506.74	477.05	2.78†	986.57	1,151.7	.234	6.59
3	Clover, corn (heavy).	451.33	477.81	......	929.14	1,200.0	.244	6.12
4	Clover, corn........	496.23	464.98	......	961.21	1,136.7	.231	6.30

In this experiment, which was conducted on the farm of a very successful sheep feeder, under the direction of the station, the combination of clover and corn gave results for almost a cent less per pound than did the combination of clover, corn and oil meal.

The following interesting table was prepared by Mr. Carmichael to show the cost of gains as affecting the cost of fat lambs:

COST OF GAINS AFFECTING FAT LAMBS

	CORN (HEAVY)	CORN (MEDIUM)	CORN AND STOCK FOOD	CORN AND OIL MEAL
Cost per 100 pounds gain	$6 12	$6 30	$6 59	$7 07
ASSUMED COST FEEDER LAMBS PER 100 POUNDS	PRICES AT WHICH FAT LAMBS WOULD NEED TO SELL PER 100 POUNDS AT HOME TO PAY FOR FEEDER LAMBS AND GAINS			
$3 00	$4 10	$4 16	$4 27	$4 44
4 00	4 75	4 81	4 91	5 08
5 00	5 40	5 46	5 56	5 73
6 00	6 04	6 11	6 21	6 38
7 00	6 69	6 75	6 86	7 02
8 00	7 34	7 40	7 50	7 67

Corn, 40c. bu.; oil meal, $32 ton; stock food, 5c. lb.; clover hay, $12 ton.

The most important thing is to learn what results may be secured from the most common foodstuffs that are suitable for sheep. Of course, corn and clover will be acknowledged to be most available east of the Mississippi and they no doubt largely enter into the rations fed fattening sheep over much of that territory.

In comparing whole shelled corn and clover hay, Henry gives the following compilation from experiments at Michigan, Wisconsin and Minnesota.*

FATTENING LAMBS ON WHOLE CORN AND CLOVER HAY

STATION	AVERAGE RATION		AVERAGE DAILY GAIN, POUNDS	FEED FOR 100 POUNDS GAIN	
	CORN, POUNDS	HAY, POUNDS		CORN, POUNDS	HAY, POUNDS
Michigan	1.5	1.0	0.31	481	334
Michigan	1.4	0.9	0.24	607	387
Wisconsin	1.5	1.0	0.37	411	277
Minnesota	1.3	1.0	0.25	523	402
Average	1.4	1.0	0.29	506	350

These experiments show but slightly over one-fourth pound a day gain, on the average. The cost of this production, or of 100 pounds gain in live weight, naturally will vary with the cost of the feed and labor. On the basis of present day prices, with corn at $1.25 per 100 and clover hay at $1.00 or more, the cost of 100 pounds of gain in these experiments for feed alone would be $8.82.

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* "Feeds and Feeding," 1910, p. 458.

That figure with top prices on lambs, $7 in Buffalo, is not very attractive to the feeder.

In these days of high prices, the value of good pasture is receiving special recognition. Blue grass pasture, the common one of the Eastern United States, under fair conditions, gives returns but little recognzied by the average stockman. There are sections of the country where sheep receive no other feed than that of the pasture. Last season I visited one county in western Pennsylvania, where I saw splendid large flocks that had never known a bite of grain. This is a distinctly hill country where blue grass grows to perfection. The farmers here hold over portions of their pasture for winter feed only, so that there is a heavy covering of grass available at this time. On one farm I saw over two hundred exceptionally fine wethers, some of which were three years old, and their owner assured me that they had never been fed grain at all. Of course, such an all year method of management is only possible in regions where there is a combination of grass and little snow. Yet this is the method followed on the Cheviot Hills of Scotland, where they have more or less snow, and where men count their sheep by thousands.

The fattening of sheep on pasture, with grain additional, has been found by experiments to give very satisfactory results. A number of stations have fed grain on different kinds of pasture, and Professor F. B. Mumford has published* a compilation of such results, that furnishes very interesting information. The following table gives the figures referred to:

FATTENING SHEEP ON GRAIN AND PASTURE

STATION	DAYS FED	DAILY GAIN, POUNDS	GRAIN PER 100 POUNDS GAIN, POUNDS	REMARKS
Iowa	63	.46	170	Lambs on blue grass.
Iowa	56	.45	241	Wethers on grass and rape.
Iowa	56	.41	301	Wethers on blue grass.
Wisconsin	25	.37	170	Lambs on rape.
Wisconsin	70	.28	340	Lambs on rape.
Iowa	63	.46	170	Yearlings, corn on blue grass.
Iowa	63	.42	187½	Yearlings, oats on blue grass.
Iowa	63	.39	199	Yearlings, barley on blue grass.
Iowa	63	.435	204	Yearlings, corn, oats on blue grass.
South Dakota	42	.44	390	Yearling, ewes, corn and grass.
Iowa	56	.453	260	Yearlings, corn, bran, grass and rape.
Iowa	56	.409	312	Yearlings, corn, bran, grass.
Average	....	.414	245.4	

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* Bulletin 2, Missouri State Board of Agriculture, February, 1909.

It is notable that in these trials the lambs made an average daily gain of .414 pound between a third and a half pound, with about half the amount of grain usually fed. Mumford, in drawing a comparison with other experiments, states that this average is comparable with 326 pounds of grain for sheep on balanced rations, 370 pounds for sheep on grain rations with roots and silage, and 420 pounds for sheep receiving a ration of corn and clover hay. This furnishes a strong argument in favor of fattening on grass or some sort of pasture. In Great Britain the farmer often carries his sheep through the winter and fattens on roots and grain, allowing the sheep to feed on the roots in the ground, which are more or less frozen, according to the severity of the winter.

Rape has furnished most valuable late summer and fall feeding, and most interesting and profitable results have been secured from feeding on this crop. A number of experiment stations have published reports of results secured by feeding on this crop.

Attention to rape as a pasture crop in America was first due to the extensive publication of experiments conducted at the Ontario Agricultural College by Professor Thomas Shaw. In 1890 he reported that 54 acres of rape pastured 17 head of steers and 537 sheep, and one acre of the rape sustained 12 lambs for two months. It is estimated that the food furnished by 1 acre of rape was worth $16.80. In another trial rape alone was fed to 60 lambs and they were kept on 2.18 acres for 25 days, during which time they increased in weight 390 pounds, or an average weekly increase of 1.82 pounds. Again, in an experiment on 1/6 of an acre, 6 lambs were kept for 42 days, and from this it was concluded that 1 acre would have pastured 36 lambs 2 months and have made 762 pounds of mutton.

At the Michigan station, 15 acres of rape pastured 128 lambs for 7½ weeks, during which time they gained 2,890 pounds. The estimate from this trial was that 1 acre of rape pastured 9 lambs 7 weeks, producing 203 pounds increase.

The following figures of rape experimental feeding are gathered from different station reports:

RAPE AS A PASTURE FEED FOR SHEEP

No Grain Fed

STATION	NUMBER SHEEP	PERIOD FED	AVERAGE DAILY GAIN PER HEAD	REMARKS
Wisconsin	48	28 days	.37 lb.	Lambs.
South Dakota	12	44 days	.37 lb.	Lambs.
South Dakota	12	31 days	.34 lb.	Lambs.

The gains shown in these three experiments, where no grain was fed, is fully as good as in many cases where concentrates are used. In fact, in the two years' feeding at the South Dakota station, the lambs receiving rape only made better gains than in two cases where shelled corn was fed on rape. Rape is a crop well suited to much of the North and Northeast, and in the fall should prove a very valuable pasturage to secure economical gains.

Alfalfa as a feed for sheep has been receiving considerable attention of recent years. A number of stations have conducted experiments of interest, in which the value of alfalfa was clearly set forth, both alone and with various grains. The Colorado station first directed attention to the value of alfalfa for lambs, due to the very extensive feeding of lambs in that state in the territory in which the station is situated. The Western lamb feeder depends largely on alfalfa, and his methods have been introduced to a greater or less degree in the region east of the Missouri. The following are some of the results secured by the use of alfalfa, which I have compiled in a uniform sort of tabular statement:

INFLUENCE OF ALFALFA HAY IN FEEDING SHEEP AND LAMBS

STATION	NUMBER HEAD	DAYS FED	GAIN PER DAY PER HEAD	REMARKS
South Dakota	10	32	.51 lb.	Lambs also fed grain.
Wyoming	20	92	.34 lb.	Lambs also fed corn.
Wyoming	20	92	.36 lb.	Lambs also fed barley.
Wyoming	3	92	.34 lb.	Lambs also fed corn and flaxseed.
Wyoming	3	92	.28 lb.	Lambs also fed flaxseed.
Wyoming	5	98	.29 lb.	Lambs also fed corn.
Wyoming	100	98	.31 lb.	Lambs also fed corn.
Wyoming	40	98	.35 lb.	Lambs also fed corn.
Wyoming	10	98	.35 lb.	Lambs also fed corn.
Wyoming	35	91	.30 lb.	Lambs also fed corn.
Wyoming	35	91	.23 lb.	Lambs also fed emmer.
Wyoming	35	91	.33 lb.	Lambs also fed barley.
Nebraska	......	98	.38 lb.	Lambs also fed corn.
Michigan	10	98	.35 lb.	Lambs also fed corn, roots.
Colorado	......	98	.34 lb.	Lambs and yearlings also fed wheat, beets.
Colorado	......	98	.33 lb.	Lambs and yearlings also fed wheat, beets.
Colorado	......	98	.29 lb.	Lambs and yearlings also fed corn, beets.

It is to be noted that the Wyoming station has extensively experimented with alfalfa hay. In 1906-7, where corn only was fed with the alfalfa, the cost of producing 100 pounds of gain is given as $4.01 and $4.26 respectively. Of ten lots of lambs, only one made a better showing. In the other seven cases, in which alfalfa was not used, but native hay, the cost ranged from $4.93 to $9.07. The preceding year, lambs fed alfalfa and corn produced 100 pounds of gain, at a cost of $4.63 and $5.28.

At the South Dakota station, alfalfa hay and grain mixture produced a pound of gain at a cost of 4 1/5 cents, while prairie hay and grain made the cost 5 3/10 cents per pound, live weight. An equal amount of grain was fed the lambs in each lot, but each lot was given all the hay desired. The one fed alfalfa consumed 298 pounds more of this feed than did the lambs fed prairie hay. This 298 pounds of alfalfa is credited with 79 additional pounds of gain with the lambs of that lot.

A friend of the writer, who is probably the largest producer of early lambs in America, for years used expensive grain combinations in order to make his lambs fat and strong. For the past two or three years he has succeeded in growing alfalfa satisfactorily, and as a result he has entirely changed his feeding methods. Now he feeds nothing but a choice grade of alfalfa hay, and produces his lambs at a greatly reduced cost over the old style of feeding.

As has already been referred to, the feeding of alfalfa to lambs in Colorado in the past has been a great industry. Hundreds of thousands have been fed each winter in Larimer County alone. The lambs fed come from the ranges of New Mexico, Wyoming, southern Colorado and a few from Arizona. They are either grade Mexican or grade Western lambs and weigh 40 to 50 pounds when put on feed. They are fed in pens in the open, but with tight board fences on the north and west. After a five months' feed they often weigh 85 pounds. Referring to the methods of feeding, Mr. F. R. Baker, of Colorado, says:*

"We feed grain twice per day. Some begin with bran, oats, or chop feed, while others put them on shelled corn at the start. While a pen is out eating their grain, the feeder forks up the alfalfa to the side of the rack; when the gate is opened they rush in like bullets, as they do when they go out to their grain. Near the feeding time the lambs will huddle up to the gates, ready for their grain. A good feeder will not vary ten minutes in beginning the morning or evening grain feed; each lamb consumes about 150 pounds of grain during the winter's feed. A few years ago, when wheat was not worth so much as corn, many fed wheat, which has to be ground, as does bald barley. Both make excellent feed for lambs. Feeders differ on the subject of chopping the corn or feeding it whole. I can see no difference; the lambs have good teeth, and they enjoy it either way. Some of our very best money-making feeders never grind it, while some of our most successful feeders advocate grinding, and claim that less grain will accomplish the same result in weight."

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*Kansas State Board of Agriculture, March, 1899, p. 106.

Silage as a feed for sheep and lambs has very distinct merit. Some fifteen years or so ago, Mr. Welsh, of Ionia, Michigan, began to feed corn silage to Western feeder lambs. He fed on a very large scale and with much success, and his operations created much interest. Some experimental feeding with silage has been conducted, but not in a large way. Sheep like silage that is not too large and coarse, and thrive upon it.

Recently the experiment station at Purdue University has published a bulletin* on corn silage for winter feeding of ewes and young lambs. This experiment showed very interesting results with the nursing lambs. The results of this feeding are shown in the following tabular statement:

SUMMARY OF GAINS WITH FALL LAMBS FED SILAGE AND NO SILAGE

Feeding Period 120 Days

LOT	AVERAGE AGE CLOSE EXPERIMENT	NUMBER LAMBS IN EACH LOT	GRAIN RATIONS FED IN CREEP	AVERAGE DAILY GAIN PER HEAD
I. Silage.................	148 days	7	Equal parts oats and bran by weight.....................	.43 lb.
II No silage..............	148 days	8	Equal parts oats and bran by weight.....................	.42 lb.
I. Silage.................	121 days	11	Five parts shelled corn, one part bran by weight..............	.50 lb.
II No silage..............	126 days	11	Five parts shelled corn, one part bran by weight......	.52 lb.
Silage average.............	134 days	9	....	.46½
No silage average..........	137 days	9.5	....	.47

This experiment shows no essential difference in results, though slightly unfavorable to the silage. The average daily gain, however, is large in each case, so that the use of the silage in this instance may be regarded as very advantageous.

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*No. 147, June, 1910.

The cost of fattening wethers is always understood by those familiar with feeding to be greater than the cost of fattening lambs. This is largely the reason why feeders so generally prefer lambs. They respond more readily to feed, and also bring a higher price on the market, for the fattened weight. The claim is made that about eighty per cent. of the sheep sold on the Chicago market are lambs.

The Missouri experiment station, during the winter season of 1906-7, conducted an experiment in fattening wethers, in which different standard and common feedstuffs were used. The sheep were separated into seven lots of twenty wethers each, and were fed for fourteen weeks. The following table gives an interesting statement of the important facts in this experiment:

RATIONS FED FATTENING YEARLING WETHERS AT MISSOURI STATION

Feeding period 14 weeks. 20 wethers in each lot.

LOT	RATION	TOTAL GRAIN, POUNDS	TOTAL HAY, POUNDS	TOTAL GAIN, POUNDS	AVERAGE DAILY GAIN, POUNDS	GRAIN FOR ONE POUND GAIN	COST ONE POUND GAIN	SELLING PRICE
1	Corn and timothy hay.	2,296	2,608	418	.21	5.4	6.9c.	$6 15
2	Corn and clover hay...	2,425	3,131	462	.23	5.2	7.0c.	6 35
3	Corn, oil meal, clover hay..............	2,420	3,314	495	.25	4.9	7.0c.	6 35
4	Corn, cottonseed meal, clover hay..........	2,389	3,409	475	.24	5.0	7.6c.	6 35
5	Corn, corn silage, clover hay................	2,429	2,498	533	.27	4.5	5.9c.	6 35
6	Corn and clover hay, self feed............	2,988	2,501	481	.24	6.2	6.9c.	6 40
7	Corn and clover hay, out doors...........	2,419	3,339	392	.20	6.1	8.5c.	6 20

Corn, 39 cents bushel; clover and timothy, $10 each ton; oil meal and cottonseed meal, $25; silage, $2.50.

Here we see the most economical feeding was where silage formed a part of the ration. Excepting with this lot, all the others were fed at a loss, so far as the cost of increased gain is concerned. In some cases the selling price was so near the cost of production, that perhaps some profit was actually made, on the basis of original cost.

In a consideration of the various rations fed, the conclusion may be fairly drawn that combinations of clover or alfalfa hay and corn give the most profitable returns. In my opinion, silage will materially reduce the cost. In every case within my acquaintance where silage is fed sheep, the feeders are getting more satisfactory returns than where it is not fed. No other food in winter, excepting roots, will keep the sheep in such good physical condition as silage as a part of the ration. Four or five pounds a day for one hundred pounds live weight should do. Roots are a great feed for sheep, but in America the cost of production is so great that we can hardly afford to grow them, when silage is so much cheaper.

More alfalfa should be grown in America. It is a very hardy plant, and will thrive under quite a wide range of conditions. No other one plant, excepting Indian corn, is its equal in value or is so keenly relished by farm live stock in general.

Rape also, as a pasture crop, should be more generally grown for fall feeding, for it can often be grown on a field from which a crop has already been taken, and the universal comment on its value is of a favorable nature.

Does the practical feeder make money on sheep? As a plain business matter, we must agree that a number of conditions vitally affect the money-making side of the business. The cost of feedstuffs, the market value of mutton and wool, and the value of the equipment for conducting feeding operations are the most important factors in causing profit or loss. When feedstuffs are high and sheep low in value, we find the very worst combination possible. Some years men make a nice profit, and feel well about the business. Then they run up against the reverse conditions, and are willing to sell at any price. Just now the sheep man cannot see the profit. In March, 1911, Mr. E. P. Snyder, a well-known Ohio sheep man, wrote:*

" Sheep have been on thin ice several times before in the memory of men now living. During the wool-buying season of 1869, wool went down to 40 cents. During that time of an inflated currency, the price had been right around $1.00 per pound. Farmers were frightened. They thought they could not raise wool at that price and they quit the business with a rush. They sacrificed their flocks by the wholesale. Great flocks all over northern Ohio were sold out at 50 cents to $1.00 per head, driven to the shambles and slaughtered for their pelts alone. One firm of stock dealers

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* *National Stockman and Farmer.*

I knew at that time added a herd of hogs and fed the carcasses to them. This firm did a great business all the fore part of the winter, and the enterprise brought them a lot of money. Within five years of this time, sheep and wool were again in demand. Breeding ewes were bringing $7.00 per head and wool, 75 cents per pound. This was before the time of the fat lamb industry. Farmers then fed wethers instead, and I knew several flocks of fat wethers to be sold at $8.00 per head, and the New York market reports quoted the pelts from these fat sheep at $5.00 apiece."

The man who keeps sheep and has a record of the cost of production is not a common individual. However, I have in my possession numerous statements from sheep feeders, that have been published in the live stock and agricultural journals during past years, that in general testify as to the profitable side of production. Of course, the wool is considered a factor, as it rightly should be. Therefore, even if one is primarily engaged in mutton production, he will include in his financial statement the income from wool, lambs or anything else that may be a credit.

In the way of practical example, I desire to give some quotations from financial statements of flocks. These statements are selected from mutton rather than wool-producing shepherds, and in each case mutton and the increase of flock are vital factors.

On the subject, "Do Sheep Pay?" P. B. J., of Indiana, writes:*

"In October, 1904, I bought four ewes for $18. I bred them and cared for them through the winter and the following May. I sold 38 pounds of wool at 32 cents per pound. The four ewes raised nine lambs, four ewes and five ram lambs. On November 1, I sold the five ram lambs for 6¼ cents per pound. They weighed 480 pounds, bringing me $30 cash. This, with the income from the wool, made $42.16, and left me the four old ewes and the four ewe lambs. In December, 1905, one of my old ewes died by founder, thus reducing my flock to seven head. The three old ewes raised seven lambs and one of my yearling ewes one, giving me eight lambs in all. In May, 1906, I sold 56 pounds of wool at 29 cents per pound, amounting to $16.52. In August, I sold four ram lambs at 6¼ cents per pound, $24.34, and one old ewe at $5.20. This gave me $46.06 for the second year's cash income from the flock, and I had ten head left of as fine sheep as can be had. There were four two-year-olds, four yearlings and two old ones. I had sold in the two years $88.22 worth of lambs and wool."

**Farmer's Guide*, April 6, 1907.

In June, 1905, J. W. Lovell, of Morgan County, Ohio, reported* on 235 head of sheep, which were wintered through on blue grass. He placed 100 in a field, and gave them only three feeds of hay during the winter. A half bushel of corn a day was fed from March 1 to 10. That was all the feed they had excepting the pasture. There were 30 yearling wethers and 70 ewes. The ewes began to lamb in April, and the 70 ewes had 80 lambs. We had 90 sheep in another 100-acre field and 45 lambs in another field. Not one of them had any shelter. The wool from the entire flock brought $514.15. Mr. Lovell further writes: "Now I have 80 lambs that I think will be worth $200 when the year is up. There are 140 yearlings and I think they are worth 50 cents a head more than they were last fall. I have $774.15 profit and my sheep left."

In an article in the *National Stockman and Farmer,* March 4, 1909, is an unsigned statement concerning experience in feeding yearlings. Two different lots of yearling wethers, of 250 each, were bought in September and October in the Chicago stockyards. They were fed on clover pasture for a time and also ran in sixty acres of wood pasture for about five weeks. They were put in feeding sheds on December 10. They were fed, in a self-feeder, corn blowings from a corn elevator and timothy and clover hay and corn stover. The grain consisted of silks, broken and whole grain and broken corn cobs, purchased at $10 per ton. The wethers were sold in the early spring, and the following is a financial statement of the results of the operation:

EXPENSES

250 yearlings, average 72 pounds, at $4.50	$765 00
250 yearlings, average 82 pounds, at $4.40	770 00
17 tons corn at $17 ton, $2 per ton grinding	323 00
Corn blowings, etc	60 00
Pasturage	80 00
20 tons hay at $6.00	120 00
Total	$2,118 00

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* *National Stockman and Farmer,* June 15, 1905.

RECEIPTS

500 yearlings, average 96 pounds, at $6.00	$2,880 00
Profit above expenses	$762 00

A friend of mine, Mr. George M. Wilber, of Ohio, who is a very extensive breeder and feeder of early lambs, and has had much experience in the sheep feeding business, in an address on making money with sheep as compared with steers, made the following statement, which is of considerable interest, coming from the source it does:

"Stalk fields can be utilized for carrying stock sheep through the winter, just as well as for carrying stock cattle, and instead of coming out in the spring worth about the same or less money than when started in the fall, as you have all known stock cattle to do more than once, they are almost sure to be worth at least as much with the wool off as they were in the fall, and, if they are any kind of sheep at all worth keeping, will shear $2.00 or more of wool. So you see by figuring that ten sheep can be carried on the same feed that one steer consumes, which is safe figuring, as I know by actual experience, and you have a profit of $20 on the feed which would be consumed by your steer. This would be $400 on each car of cattle wintered. How many of you make a profit of $400 per car on the steers you stalk through? How many of you make an average net profit of $400 per car on cattle you full feed?

"Suppose you started the winter with a band of good breeding ewes, say 200 head which would fairly represent the same weight of twenty cattle. Your cattle on the same amount of feed would come through to spring a very little heavier than when started in the fall, but, we will say, would be worth ½ cent more per pound; this would make $5 per head for wintering the steers, or $100 per car. If your 20 steers cost $4.00 in the fall, and weighed 1000 pounds, they would represent an investment of $800 to $900, and in the spring a profit of $100. Now, I may have figured the advance and gain of cattle too low, but, if I have, I want some one to set me right.

"I will try to give you figures on the sheep part of the comparison, which, I believe, would be a fair average. The 200 ewes would represent an outlay of, say, $1000; wool cut off in the spring, $400; 80 per cent. of lambs at $2.00 per head, $320. Allowing for a depreciation in value of ewes of $1.00 per head, they would be worth in the spring $800, making a net value of $520, or a gross profit of 52 per cent. The cattle would represent a gross profit of 12½ per cent., both estimates being up to May 1, we will say. Figuring the summer months, we then have the following: To gain of cattle, 6000 pounds, at, say, $4.50, $270, or 33⅓ per cent.; to gain in value of ewes at 50 cents per head, $100; to value of gain of lambs at $2.00 per head, $320; making $420 net gain or 42 per cent. for summer months, or a net gain for the car of sheep over a car of cattle for the same length of time of 47¾ per cent."

One may find many cases in which men have made money in mutton production. As to just what the degree of profit will be depends entirely upon circumstances. Two men, with the same feeding stuffs and flocks of sheep absolutely comparable in number and quality, may, and probably will, secure quite different results. The personal equation of the man enters in here as the most important factor. There come times, like the present, when it is absolutely impossible to produce mutton except on a losing basis. However, under normal conditions, it is my belief that approximately 500 pounds of corn and 350 to 500 pounds of hay will produce 100 pounds of gain in live weight with fattening lambs or matured sheep not in the best flesh at the start. How great a degree of profit or loss will ensue depends upon the cost of the feed and the price paid for feeders and the selling price received, or, on the initial cost of production, where one breeds the stock himself.

The investigations of the Tariff Commission of President Taft have shown wide differences of opinion among sheep men on this subject of cost. In but very few cases have the representatives of the commission been able to secure other than guess answers to questions on the cost of feeding. My own experience in interviewing shepherds has resulted in a similar class of information.

There is one thing, however, that we may feel reasonably sure about, and that is that in a very large per cent. of the cases the country over where men have stayed persistently with the sheep industry, through periods of depression and prosperity, they have made profits of a very satisfactory nature. In the Western range country, no class of stockmen in the past has made such comfortable profits as the sheep men. In the East, conditions are now better than they ever were before for developing flocks to a financial profit, for mutton is more called for than ever in the history of the country, while cheap lands for its production should enable one to develop a flock at a relatively low cost of support. It is unnecessary to refer to the special benefits from raising sheep, the value of weed eradication and the enrichment of the soil. But it is fair to say, as a general, long-time proposition, that the hoof of the sheep is just as golden now as it ever was, and that the present depression offers a golden opportunity for the man of opportunity.

The meeting was then adjourned.

DRAFT HORSE IMPROVEMENT AND STALLION REGISTRY LAWS*

F. C. MINKLER

The ever-faithful horse has been the subject of a great many false prophecies. A few years ago the claim was made that the legislation regulating the activities of questionable sportsmen had ruined the prospects for future development of the light horse; and this was followed later by a quite universal sentiment, that the invention of motor-power machines and trucks would certainly drive the draft horse from his field of greatest usefulness. Fortunately, the false prophet erred in judgment, for at all market centers to-day there is a growing demand for modern market types at good prices, while the average prices paid for farm horses has steadily increased throughout this so-called revolutionary period.

The question naturally arises, has there been a corresponding improvement in the quality of the animals marketed, and this suggests another phase of live stock improvement. It has been said that market demands fix type and establish prices. Is it possible that market demands are responsible for the "57 varieties" of horses offered for sale or exchange at the various centers, or is there another governing factor? Surely the percentage of inferior animals found in use on our farms and for sale at our exchange stables is far too great, for relatively few animals are listed as market toppers. Where there is one team of draft horses that sells for seven hundred and fifty dollars, there are dozens that sell for less, and, in my judgment, we have too many culls, too much trash and by far too many low-priced beasts. Where do the mongrels come from? What force or factor is responsible for this condition?

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*This address was delivered at the meeting of the State Breeders' Association held in Albany, January 16-18, 1912.

I will not endeavor to account for many of the failures in live stock breeding, nor can we expect to produce all top-notchers. Excuses do not solve problems, however, nor do they establish principles of improvement. The consideration of two or three influences at work seems appropriate.

In the first place, the average American farmer or breeder does not recognize the extreme necessity of using only pure-bred sires, possessed of blue blood and outstanding individuality; and, secondly, he does not realize the dangers and disadvantages of indiscriminate mating, but rather is willing to chance improvement by mixing breeds, mating relatives, using immature sires, regardless of their shallow blood lines, and in spite of their evident lack of breed character or prepotency. Furthermore, in many cases where pure-bred sires are in service, little or no care or judgment is exercised in the selection of the females, in which case the sire alone is expected to bring about improvement, and his owner is openly condemned if failure results.

Another unfortunate condition existing in this country is the presence of so very many breeds and types within any given section. I venture the statement that if we should go through any given section in this state we would find a dozen different breeds of live stock of vastly different pattern and type, and even though the sires be pure-bred and registered we would find that they are being mated with females possessed of vastly different characteristics, in regard to conformation, type, breeding and other influencing factors. Such activities must surely result in failure or at least disappointment, for the practice is contrary to established principles of breeding and selection. There is no occasion for the farmer to attempt to run an experiment station on his farm, nor is there need for establishing more or new breeds of live stock. This is exactly what is being attempted on many farms, as is evidenced by their failure to put into use or practice certain definite principles that have long since passed the experimental stage.

Scotland is famous in the horse-thinking world because she has produced one breed, the Clydesdale, and her farmers know of no other breed. The evolution of this breed was not the result of using grade sires nor were the foundation females mongrels. Likewise, the development of the Percheron horse has made French farmers known the world over. It was purely a matter of clinging to a type moulded by utility and measured by market demands. Their success was the result of steady growth, and not mere good luck.

It is time that we shout a halt to the practice of indiscriminate mating of animals, the mere coupling of male and female because one is of one sex and the other of another sex, and try through educational channels to bring our farmers to a fuller realization of the old saying that, "A good sire is half the herd, but an inferior one is the whole thing." To this end we should direct our efforts along three lines: (1) Toward disqualifying from service mongrel or unsound stallions that are lacking in either breeding or individuality, or both, beasts that have failed to sire useful or marketable types; (2) toward unifying type by selection, based on utility, within the breed, rather than originating new breeds based on mere fad, fancy or beauty; (3) toward organizing breeders' associations and creating live stock shows which will localize interest, stimulate activity, demonstrate principles, and combine efforts directed toward permanent improvement in the breeding, feeding and general management of pure-bred live stock. That we have stallions in service that would not bring one hundred dollars on the market if unsexed in their prime no one denies; that they are being patronized because they are cheap is evidenced by the vast number of common colts; that we must eliminate them from activity in the stud should be the earnest resolve of every lover of a good horse.

To date, eighteen states have enacted stallion registration laws directed to eliminate undesirable sires from public service. Some enactments have been drastic; others, reasonable; all have been successful in raising the standard of sires in service, there being a notable increase in the proportion of pure-bred animals, as compared with the grades in use. In several states grades are entirely barred from stud service after a given date, usually three years in advance of the time of enactment. This advance notice makes it possible for owners of grades to dispose of their sires and secure in their places pure-bred and registered individuals.

A brief summary of the New Jersey law, together with the results so far secured, has been requested by the Commissioner.

Provision was made for a live stock commission, to be named by the Governor, consisting of the director of the Experiment Station, an authorized representative of the Grange, the professor of animal husbandry of the Experiment Station, a graduate veterinarian, and a prominent breeder of live stock. The first three members were made ex-officio, while the term of the veterinarian and of the breeder of live stock was fixed at three years. The duties of this commission were fixed as follows: (1) To purchase and maintain stallions of the draft and coach type for distribution and use in the several counties of the state, through breeders' associations, duly organized, which provided dams for breeding that conform to certain fixed standards of excellence; (2) to aid in the selection and distribution of breeding sires and dams of other classes of live stock; (3) to constitute a stallion examining and registration board.

The active members of the commission, namely, the professor of animal husbandry, the veterinarian and live stock breeder, constitute the Stallion Examining and Registration Board, the duty of which is to personally examine every stallion offered for breeding purposes in the state each year, and to issue a license service certificate to the owner of the stallion whose animal meets the requirements of the law. Stallions are exempt from further presentation before the board after ten years of age, but the board is authorized to revoke a previously issued certificate at any time, upon finding the stallion unsound or undesirable for breeding purposes. Advertisements are inserted in designated official papers in each county, stating the time and place of the meeting of the examining board, and all stallion owners are required to present their animals for inspection and examination on that date. Two forms of certificates are issued by the board, one being for pure-bred animals, duly registered with recognized registry associations, the other for grades, the term being defined as an animal, the progeny of a pure-bred and registered sire or dam.

The legislation further covers the matter of correct and accurate advertising, the presentation of authenticated and tabulated pedigrees, and fixes a severe penalty for issuing misleading statements of any kind. No charges are made for the examination of stallions by the board, as the members are allowed a per diem salary and expenses for each day's work devoted to the interests of the commission. A fee of five dollars for the original certificate issued is collected, while the certificates are renewed annually for two dollars each. The decision of the examining board is final, and a penalty of fifty dollars for the first offense and one hundred dollars for the second and each subsequent violation of any of the provisions of the act is fixed by law. Special provision is made by the board for issuing a temporary permit to the owner of a stallion, who may purchase animals for breeding purposes after the regular annual examination, granted after an inspection by one of the commissioners. This permit becomes void on and after the date of the next regular examination held in the county. Under the present arrangement two examinations are held in the larger counties, one in the spring and the other in the fall. This arrangement makes it possible for all stallion owners to present their stallions before the board annually, without inconvenience or traveling great distances.

This system of a personal examination of every stallion by the examining board has given most excellent results, and does away entirely with the objections usually prevailing when the stallion owner is permitted to obtain his certificate of soundness from his local veterinarian, to be used as a basis for granting a license service certificate. Furthermore, owners of mares, as well as the owners of stallions, congregate at the place where the examinations are held, and are able to compare the stallions side by side, which inspection prompts the stallion owner to have his animal in the best possible breeding condition throughout the entire season. The commission makes tours of inspection, and the secretary's time, for the most part, is used in mingling with the stallion and mare owners, in a united effort to encourage the breeding of mares to stallions closely resembling in type and conformation that of the mare. In this way it is able to further pass upon the usefulness of the stallion as a breeding sire. In addition, this regular and personal inspection makes it possible to weed out not only the unsound horses, but those whose colts are not uniform or of a high order.

New Jersey is a small state, comprising twenty-one counties, and requires approximately fifty examinations by the board each year. While the practice might not be feasible in New York State, it seems to me that the state could be divided into sections, and provision made for individual examination by a competent board of every stallion in the state. The results obtained thus far after three years of inspection and examination are decidedly encouraging.

At the outset many of the stallions were presented before the board in a miserable condition. Not only were many of them unsound, but they were poorly fed, their feet had been badly neglected, they were not accustomed to work or regular exercise, many of them having never been taken from the breeding stall or yard after entering the stud. During the season of 1909, seventeen per cent. of the stallions examined by the board were barred from service. During 1910 twenty per cent. were found to be unsound and were refused certificates. In 1911 only eight and four-tenths per cent. were disqualified. During this entire period many stallions that were in service previous to the enactment of the law were unsexed by the farmers on general principles. Each year the board has been able to note a marked improvement in the general appearance, and the breeding condition of the stallions. Reports from practicing veterinarians in various parts of the state show that they have emasculated an unusually large number of undesirable stallions condemned by the farmer himself as not being worthy of presentation before the board, let alone being used for public service. Further advice from the veterinarians was to the effect that practically all the stallions rejected by the board were unsexed. The owners presenting their stallions in poor condition were cautioned against repetition of such practice, were given advice as to the proper method of caring for, feeding and managing a breeding stallion, and requested to present the animal before the board in better condition the next year. The board has been very rigid in the issuing of license service certificates to young stallions, and few owners care to bother with the stud colt until three years of age, if there is any question of not securing a license, because of failure to qualify as to breeding and individuality; therefore, only the very best stud colts were kept for the stud. Statistics were gathered at the time of each inspection to determine the number of mares bred, the service fee charged, whether or not the stallion was regularly worked or exercised, the number of living colts resulting from his previous year's activities, and the exact location of his field of service in the various counties; and, whenever possible, a list of the owners of mares bred to a certain stallion was secured to be used as a guide while inspecting the colts sired by this particular stallion. Within a short time information will be at hand suitable for publication, giving, in tabulated form, valuable information relative to the economy and usefulness of working breeding stallions, and the effect of such exercise on the character and number of the foals sired.

The legislation relative to the registration and licensing of stallions is very popular with the owners of commendable stallions, and enforcement of the law is comparatively easy, inasmuch as the executive officer has the cooperation of licensed stallion owners, and it is almost impossible for the owner of a mongrel, unsound or disqualified stallion to obtain sufficient patronage such as will tempt him to violate the law and suffer the penalty provided for such offense. There was some objection among owners of stallions living in distant parts of the county where the examination was held in the central part of the county, the grievance being that it was a hardship to bring the animals so far for inspection. The board has, therefore, found it advisable to hold two examinations in the larger counties which has almost entirely done away with the objection mentioned, and the owners are eager to present their charges before the board.

The mere fact that this public assemblage of breeding stallions is largely attended by owners of mares, as well as stallions, is a good advertisement for the owner of a sound stallion presented in first-class condition, and likewise undesirable publicity for the owner of unsound or undesirable specimens. In a great many instances, owners of inferior stallions have retired their charges, as they did not care to experience the embarrassment of presenting mere mongrel stallions along with desirable stallions for official approval. This fact alone more than outweighs any objection to the public assemblage of stallions resulting from owners living at a distance. As the number of stallions increase, additional examination points will be added to the list by the board.

The present framing of the law designates certain unsoundnesses and diseases which disqualify stallions from service. It is the judgment of the board that it is equally important that stallions of undesirable conformation, even though they are sound, should likewise be refused a license service certificate, for the presence of such defects as are noted on many of the stallions is far more objectionable than some of the unsoundnesses mentioned in the law that disqualify from service. In many cases the board was required to issue certificates and commend stallions that were decidedly inferior in conformation and individuality, and possessed of defects that are known to be equally as transmissible as those specified by law. Furthermore, such stallions while in service have failed to sire creditable foals. Unfortunately, the board is compelled at this time to license pure-bred or grade stallions that are sound, even though they lack individuality, and it is known that their colts are inferior. It is exceedingly difficult to convince the average farmer that a stallion possessed of the best breeding, and a sire of good colts, is unfit for service, due to the presence of a slight unsoundness, as defined by law, while his neighbor's stallion, being free from any of the unsoundnesses mentioned in the law, possesses notable defects, is of relatively unknown breeding, does not possess any commendable breeding points whatsoever, and is, nevertheless, worthy of a license. Therefore, the board is unanimously of the opinion that they should be given such authority as will enable them to recognize superior individuals of known usefulness, even though their breeding may be relatively unknown, and, likewise, to refuse a license service certificate to inferior animals, regardless of their known breeding.

It is doubtful if there is anything gained by defining certain unsoundnesses as disqualifying a stallion from service, for too many times it is a matter of judgment, and individual cases require separate decisions. The board should be vested with authority to issue or refuse certificates as their judgment prompts, after a careful examination and thorough investigation of each individual case. Such authority would definitely fix responsibility and surely result in marked improvement of sires offered for public service within the state. It might be good judgment to permit a competent board to order an inferior animal castrated in case of continued and annoying violations, also if necessary impose a penalty on mare owners patronizing unlicensed stallions. In any event the mongrel stallions must be eliminated.

It will be remembered that three years ago the state of New Jersey appropriated a sum of money and authorized the Live Stock Commission to purchase and maintain draft and coach stallions for distribution and use in several counties of the state, through breeders' associations that provided a stipulated number of approved mares for service, possessed of the same type and conformation of the stallion petitioned for. A standard of soundness as well as excellence was fixed for the mares, and only such females as were found to be sound and of the same general type of the stallion in service were mated. Ten stallions were distributed, and to date we have three hundred living colts resulting from their activities. Sixty-six per cent. of the mares bred produced living foals, and these youngsters are selling on the market at unusually profitable prices. The stallions were placed in localities where there was a scarcity of animals of their particular type and breeding, and the farmers asked to purchase brood mares for service. The cost per mare has ranged from five dollars to fifteen dollars, varying with the different associations, inasmuch as the breeders' associations were asked to provide for the maintenance of the stallion during the entire year. The object of this step was to stimulate interest in draft horse breeding, and to encourage the farmers to produce on their own farms more useful as well as more marketable colts.

The commission formulated fixed rules and regulations relative to the organization of breeders' associations in the various counties, and a complete outline of the original working plans will be found in the 1909 report of the commission. There seemed to be exception taken by some members of the associations to the feasibility of any system of offering for stud purposes breeding stallions, that would not fix definitely the total cost of service, and many mare owners did not take kindly to the plan suggested by the commission whereby each mare owner was responsible pro rata for the actual cost of maintaining the stallion loaned by the state during the year.

The chief objection seemed to be the indefinite cost to the members of the association, per living foal; for in case the colts were relatively few in number, the bulk of the cost of maintenance would be chargeable to the members whose mares produced living colts. This unfortunately caused some members owning sound and approved mares to refrain from breeding such animals, fearing that the cost would be excessive, preferring rather a fixed service fee with the usual insurance. In several cases where a full quota of mares were bred to an average foal getter, the charges were relatively small, and the commission, at the time of making this assessment provision, was satisfied that the total cost per member would be smaller than would be the case if a stipulated fee were charged. The plan providing for the payment of a fee of five dollars at the time of service, with a like amount due when the mare proved to be in foal, was tried with three of the associations and worked well. However, owners of irregular breeding mares objected to making any payment until they were satisfied that their mares were in foal. The most popular plan seemed to be a straight service fee of so much to insure the mare in foal. Under this arrangement the state, rather than the breeders' association, was responsible for any deficiency in the cost of maintenance of the stallion, in case only a few mares were bred, or providing the stallion did not prove to be an average foal getter. Where this plan was followed, a contract was made through the association with a responsible groom who made several stud stands in the county in order to accommodate owners of mares, and members of the association who lived at different sections in the county.

Another objection raised by the members of the association was in regard to inspection of the mares by the veterinarian. The rules of the commission provided that only approved mares passing a satisfactory inspection should be mated to the state stallions, and in cases where owners failed to secure such certificates from designated veterinarians in advance, they claimed annoyance by having to comply with this restriction. The importance of sound mares of the same general conformation as the stallion in service is of very great importance, and too many times mare owners do not properly recognize this principle of breeding. It was thought that the veterinarian's judgment as to the desirability of certain mares to mate with the stallion in service would be a help rather than a task to the members, and it is to be regretted that this viewpoint was not more universal.

Further difficulty was encountered in securing a creditable number of approved mares of the desired type and blood lines. Many of the Western-bred mares proved to be shy or irregular breeders, others were old and had not raised a colt for several years, while the greater portion of the local-bred mares were of the roadster type, and not suited for mating with draft or coach stallions. With such specimens at hand it was easy to question the potency of the sire, especially in sections of the state where draft horse breeding was looked upon with disfavor by those accustomed to breeding for speed and beauty. Owners of such mares were irregular in returning their charges for retrial or service, and in many cases expected far too much from the stallions in service; while others used hasty judgment in condemning his usefulness. The old saying "that a lie will travel a mile, while truth is putting on its boots" must have originated in a horse breeding district.

The breeders' associations were live wires in collecting suitable mares, and in several cases grouped their orders and brought in select individuals of known usefulness from adjoining states. Reports from secretaries show that in several instances farmers disposed of three or four misfit roadsters, and purchased in their place two blocky, draft mares. This exchange enabled them to accomplish far more farm work at much less cost for feed and care; moreover, there is much more pleasure in working two trusty draft mares than in worrying along with three or more light, flighty, nervous roadsters, as is the case when high-spirited, hotblooded animals are hitched to modern farm implements. There is also noted activity among farmers having suitable pasture land in purchasing draft weanlings and fillies, the object being to grow and develop them for breeding purposes under New Jersey conditions.

It is seldom that a single enterprise creates such universal interest and prompts so many followers as is the case with draft horse breeding in our little state. Several importations of stallions and mares have been made by private breeders since the state's quota of sires arrived, and in other instances, where stallions could not be supplied by the state, companies were formed which purchased stallions outright for use in their neighborhood. In addition to this activity among county or neighborhood organizations, individual farmers have purchased high-priced draft sires for public service or private studs, while in many other sections of the state public-spirited citizens have contributed to the purchase price and maintenance fund of imported sires offered for public service at nominal cost in their respective localities.

Nor does such activity subside at the mere instance of purchasing sires for stud purposes. Colt shows are promoted and liberal cash premiums, with appropriate cups or medals, offered for the top-notchers, with the result that the entries are numerous, the foals well grown, properly fed, and the young stock a real credit to the breeder. Any money over and above the amount needed for the actual maintenance of the stallion collected by the treasurer of the breeders' association is offered as premiums for the best colts sired by the stallion in service, while horsemen generally were eager to offer substantial prizes for creditable individuals. It has been said that this plan was paternalistic, and legislation requiring inspection, examination and registration of stallions was interfering with personal liberties. In my judgment there is no ground for such assertions. Business enterprises of every nature are regulated by laws far more drastic than those proposed destined to eliminate serious drawbacks affecting live stock breeding. Distribution of stallions might not be feasible in a large state like New York, where the draft horse industry is on a footing by itself. However, under the conditions that exist in New Jersey there is every reason to believe that the move was justified, and surely there has been prompt response from the breeders themselves in a united effort to produce the farmer's horse on the farm. Public sentiment strongly favors a continuation of the method of improvement, and I feel sure that steps will be taken at an early date, such as will stimulate activity in the breeding and selection of other classes of live stock as well. There is no room for doubt when consideration is given to the matter of registration and licensing of stallions. No one can deny the fact that it is a means of eliminating from service unsound as well as undesirable stallions, and while there is great room for improvement in the laws thus far enacted regulating live stock breeding, it is evident that forces at work will accomplish beneficial results. There is danger from too much legislation, but education knows no bounds. If this sort of a campaign is launched there is no doubt in my mind but that success will crown your efforts.

EVENING SESSION

The meeting was called to order by President Pearson in the Assembly Chamber at 8 p. m.

THE PRESIDENT: I have the great pleasure and honor of announcing as the presiding officer of this meeting Lieutenant-Governor Conway.

THE LIEUTENANT-GOVERNOR: Ladies, Members of the New York State Agricultural Society and the State Breeders' Association, and Fellow Citizens: I wish to say that I greatly appreciate the compliment and privilege of having been invited to preside over your joint gathering this evening. Last evening you were welcomed to this capitol by Governor Dix. It only, therefore, remains for me to add my own personal, cordial welcome, and in doing so I speak not only for myself but for the senate of this state, over which I have the honor to preside.

I have had the opportunity on several occasions to express my views in regard to what is called scientific and intensive farming and up-to-date methods. I am not going to dwell on those subjects to-night. I want, however, to refer to a few practical things not relating to methods of farming, but rather to methods

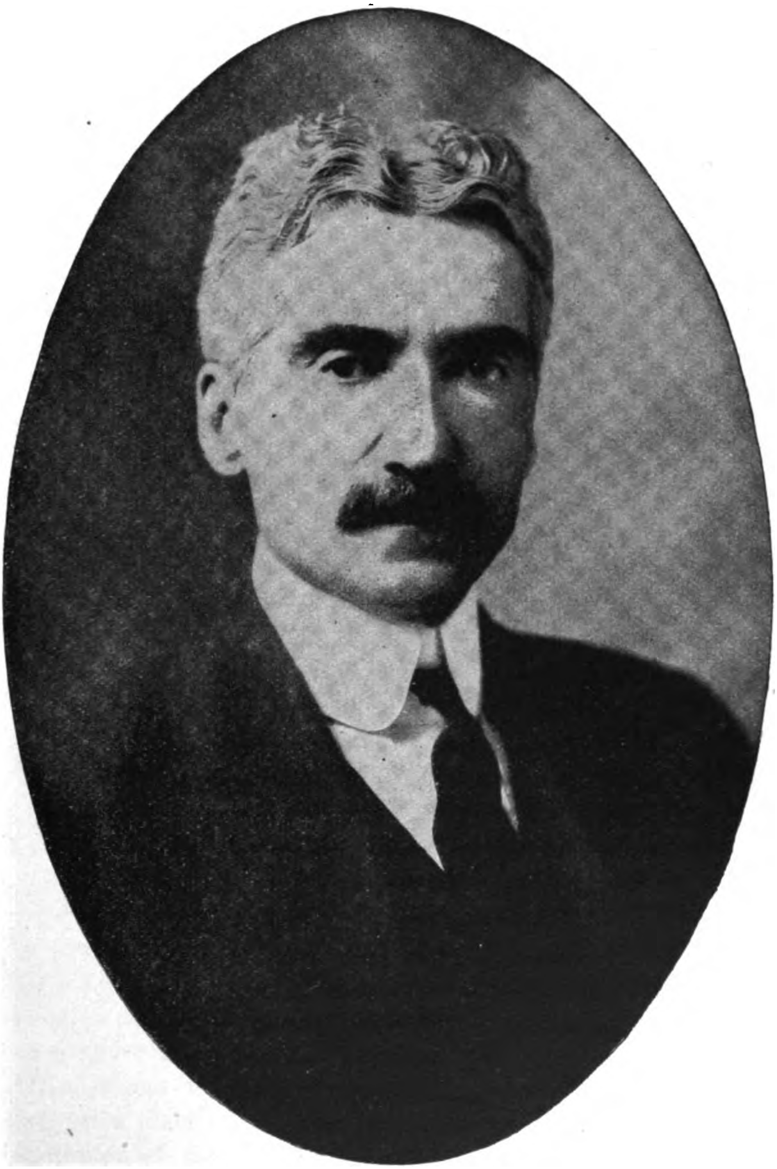

Fig. 46.— THOMAS F. CONWAY, Lieutenant-Governor.

of relief from some of the evils of which farmers to-day complain. This is an age of organization. Business men and professional men organize to promote their common interests and pursuits. Societies organize for various purposes. We have what we call organized charity; and, I regret to say, we also have what may be termed organized selfishness.

Outside of exchanging views and discussing the best methods of farming, there is another equally important subject to which you ought to direct your attention. It concerns the method by which the farmer can get the proportion of profit to which he is entitled as the fruits of his labor. You may increase your output; but you may increase your profits without doing so, if you will devote more attention to certain things which do not relate specifically to the question of scientific agriculture. Therefore, it seems to me that gatherings of this kind are important for another reason than those I have stated. After you have discussed problems and agreed upon remedies, so that what was vague and uncertain becomes after a time clear, the time has come to stop discussion and to begin action to get results. The farmer of this state is especially favored in the vast acreage of rich soil, in climate, in rainfall and particularly in nearness to the great centers of population in which farm products find their best markets. Yet side by side with those advantages, there exist economical conditions that nullify to a large extent the benefits that ought to be derived and justly expected from them. Do you realize what all this complaint by the consumer, in regard to the high prices he must pay for farm products, means? Does the city man, if he is here to-night, realize that the farmer receives in fact less than fifty per cent. of what the consumer pays for farm products? That is a startling fact. It impresses one at once with the absolute conviction that there is something radically wrong in the economic system under which it can occur. What is it?

That brings us to the practical problem of which I wish to speak for a moment, and that is, a more economic method of the distribution of the products of the farm. Why is it that, with the intelligence shown in your discussions, on this more or less side issue, although it bears directly upon your prosperity, you have not adopted and put into operation some practical plan? I have been at meetings of agricultural societies in different parts of the state, and I have uniformly heard unanimous applause for the statement that one of the chief and most important methods of obtaining relief was the establishment of a parcels post in this country. Why is it, with that conviction, not a conviction born yesterday, not something new, experimental and untried, but a conviction that results from a knowledge of the benefits of the operation of the parcels-post system in England since 1883, and of its successful operation in every civilized country of the world except ours, that you have not established it here? In England in 1883 the attempt to introduce that system finally succeeded, after bitter opposition. In the following year there were over twenty-three million separate parcels carried by post. Twenty years later there were over ninety-seven millions of parcels carried by post. At the same time, the postal surplus increased from thirteen and one-half million dollars to over twenty-seven millions of dollars; and yet in our postal system, during the same time, we usually had a large annual deficit. With that demonstration of its value before the farmer, we have had discussion after discussion, complaint after complaint, that something was wrong and an agreement that that system would afford relief. Well, discussions are serviceable only as they lead to results, and if after discussion and examination you have found a remedy, unless you put it into operation, your time has been wasted, your discussion fruitless and your condition is no better than it was before.

Why is it that the farmers of this country have not the parcels-post system, plus central selling agencies in the great markets, run by farmers? You gentlemen of the Agricultural Society of the State of New York and the State Breeders' Association, having grasped its need, having satisfied yourselves of its worth, have there stopped, except to address an unheeded request to Congress to establish that system. For many years you have demanded it, and for an equal time your demands have been ignored and refused.

The people of this country, brought up on the theory that political parties are absolutely essential, that without political parties nothing could be accomplished, and having allied themselves with one or the other, regard it as a discredit to have it said that upon any occasion, in any election, they did not vote the straight and regular ticket. The outcome has been what? You have treated economic questions as political ones. You have made party matters of that which has nothing in common with party. You prefer to treat the economic questions of this country as political questions when, as a matter of fact, the welfare of the citizens of this state depends more upon dealing wisely with economical questions than upon political questions to-day. What is there political about a reasonable revision of the tariff, so that, if combinations of manufacturers here exact excessive and extortionate profits, competition from abroad will be invited, and afford you relief? What is there unpatriotic or inconsistent with your party duties to say to the manufacturer, "I am willing you should have reasonable protection in your business, but I am unwilling to make that protection so high that you can make me the prey of domestic combination." What is there political about the question of having good highways, or the conservation of our natural resources? What is there political about the question of having better agricultural training, or manual training? Upon agricultural training, every dollar spent will come back tenfold to the people of the state; everything that adds to the farmer's wealth adds in a corresponding degree to the welfare of every citizen of this state. Why, therefore, do we not spend a little more and get a little better and more numerous agricultural schools in this state, so that every farmer's son will have within his reach an agricultural training that will not be beyond his means? Why is it that in this state to-day we do not give a little better manual training to the youth and establish more schools for that purpose? We have done much for the home, but it is little compared with what we ought to do in adding to the comforts and conveniences of farm life.

Of course, in earlier times in this state and country, when our natural resources were enormous and our population small, we could afford to ship abroad our raw products, even though later we had to buy them back at very high prices, after the skilled mechanic on the other side had converted them into a higher form. But now that day has gone, because of our increasing population. We should now supply the skill here and do that work here and get the benefit here. Is it not up to you gentlemen of the farmers' associations to insist on this policy?

It is a truth that must have impressed itself upon every observer, that no advance, the adoption of no new policy, is possible until the majority of the people of this state and country believe in it. What troubles me, however, is, that having agreed upon the importance and even the absolute need of those things, that you do not devise some practical means of getting them. If you can add to your prosperity and that of the state by so doing, is it not worth your effort? By "practical means," I mean that the farmers of this state and of this country should say to any candidate for public office, for Congress particularly, so far as parcels post is concerned: "This is not a political question. How do you stand on it? You know my needs; are you willing to work and vote for them?" If he is not, see that he is defeated; if he is, see that he is nominated. If you do that, you will get results without injury to any other business interest. But, so long as you hesitate, and divide on party lines, and make great economic questions matters of party politics, the great express companies will go on heaping up fabulous profits at the peoples' expense, your requests will continue to be ignored and denied, and you may improve your methods of scientific or intensive farming all you like, but you will still have taken from you a large part of that to which you are entitled. The consumers will equally suffer and from the same conditions; and the man who distributes, he who does not produce, will grow rich.

I suggest, as a practical thing, that the farmers of this state forget that there is such a thing as party upon every question that is not strictly political, upon every economic question that reaches their welfare, and that they insist that the man who represents them understands their needs, and is honest and independent enough to see that they are cared for after election. Even if you want to consider his politics, there is no party in this state so poor that it has not men in it equipped to do just that work and who can be trusted to do it.

You have to-day a weapon that will be more effective, if honestly and earnestly used, than the citizen has ever before been supplied with to make his wishes felt and to control official action. To-day, the Direct Primary Law, defective though it is, enables you to go to the very foundation of government. You can begin at the bottom and build from there, if you discharge your duties. You can select your delegates to conventions, and not have them named for you by some boss or machine; you can select your candidates for office in many cases, men of your type who know your needs and who will labor for them. Will you do it? Or, will you carelessly sit at home, and let others, as in the past, do it? They will be glad to, but they will do it for their profit and at your expense and you can hardly complain, if you are too indifferent and negligent to discharge your duties as citizens. Every farmer who is successful is a force for civic good in his community. The state of New York is richer and better because he lives in it, but it will be richer and better still when that farmer, instead of confining his attention solely to the duties of his farm, gives a little more of his time to regulating the political affairs of his state and locality.

In introducing the first speaker of the evening I present a man whose life is a lesson illustrating the importance, not only of studying and understanding, but of courageously discharging every civic duty, not in high positions alone, but from the lowest to the highest; a man born on a farm in this state, with few advantages, less, doubtless, than yourselves and your sons have had, and who later on, by his efforts and diligence, became a lawyer of high standing, a jurist of great distinction, a statesman, and finally, as mayor of the greatest city of this country, has performed and is performing services of lasting benefit. The secret of his success has been his willingness to follow where his conscience led, that he was not afraid of work, and never surrendered his independence of judgment or action. I know we all feel honored in having with us to-night Mayor Gaynor, of the city of New York, whom I now present to you.

THE COST-OF-LIVING PROBLEM

WILLIAM J. GAYNOR

I have been assured that this is really the Agricultural Society of the State of New York. I must say I would not have believed it without that assurance. It looks exactly like the legislature in session, with a legislative agent interspersed here and there to fill up the seats. But I have no doubt that instead I have before me farmers composing the Agricultural Society of the State of New York.

I have come here to say only a few words to you as well as I can with my still imperfect tongue. The letter which I received from the Commissioner states that the special topic for our consideration is the cost and prices of agricultural products and the high cost of living and high prices, and the next letter says that as the main talk of the meeting will be to get producer and consumer into closer relations, it will be appropriate to make some remarks on that head. And then I am gently reminded that the speeches are all to be short, like the Lieutenant-Governor's. Wherever I go I find that the chairman generally says everything that I intended to say, and then I have nothing left.

This subject of high prices and of bringing the farmer into closer contact with the consumer in the cities is not confined to the country by any means. We have great complaint in the city about the high prices mentioned in this letter. They say you farmers are getting altogether too high prices, and I am told that you farmers are all complaining that the prices are too high, also. Not the prices that you are getting, however, but the prices that you are paying to somebody else. And that is the same down in the city. Wherever you go people are complaining of these terrible, high prices, but every man that I know is doing his best to get the highest prices that he can. And then he goes home or to some meeting where a great deal of buncombe is got off and complains at the top of his voice of these high prices. They tell me down in the city that you farmers are getting too high prices. All I have said to them is that if you are getting high prices I am mighty glad of it; that it is high time you got high prices, or, at all events, decent prices, and I hope you will manage to keep the prices that you are getting high as long as possible and keep down those you are paying as much as you can. It is the universal complaint. They come up to the City Hall with delegations, three so far, telling me that they want to abolish the middleman entirely and deal directly with you farmers. I told them I had not the slightest objection, that if that was all they came for they had my assent forthwith, but if they came to me to assist them to bring that state of things about, I thought they were imposing on me a pretty hard job. And then I told them what I thought, and I am going to tell you what I think, whether you like it or not. I suppose there are some middlemen here. I do not believe you are all farmers. That is too good to be true.

The Lieutenant-Governor has told you that I was born and reared on a farm up in Oneida County. That is true. I never like to lug it in by the heels myself, but if somebody else says it it is all right. I met a gentleman to-night, a member of the legislature, who knew my uncle and cousin with their farm up in Lewis County, where, in my boyhood, when they cut down trees in the winter, in the spring, when the snow thawed out, the stumps seemed to be as high as chimneys. I suppose it is so up there yet, more or less. And I assure you we had hard times enough then. Prices were not high then, and I very well remember that our sources of income were very few. Except for the tubs of butter that we sold in the fall through the middleman who came around to buy it, we did not receive much money. Nor could we afford to drink anything but skimmed milk, and we did not eat eggs either; we took those down to the village and exchanged them for something else. I have a large notion that that condition of things is pretty widespread through this state yet, notwithstanding all I am hearing down in the city about the high prices and the luxuries of farmers. You would think down there that every one of you had an automobile, for which you paid ten or twelve thousand dollars, but I know it is not so. I have told those people that I know no way to abolish this terrible middleman. When they told me that he is rich, that his profits are enormous, I said that if the profits were so enormous I was astonished that they did not all go into the same business and get rich also. From the very first time I read Adam Smith, up to this hour, I have had a notion that supply and demand would bring about just that result. Where a business becomes so profitable that everybody gets rich in it, others rush into it and make a distribution of it, and it spreads out rather thin like a piece of butter on a piece of bread. On inquiry, I found that three per cent. on the average was probably all they made out of such things.

I also told them that somebody had to distribute this produce in the city of New York when it got there. If the farmer does not want to send it to a middleman, he must go down himself or send his son down, and I guess he has to send a team and a wagon to carry it around to our doors also, because we have to get it to our basement door some way. I imagine that if he has some left over he needs a place to keep it. He has to hire a store, hasn't he?

He has to hire clerks and pay rent, hasn't he? And, if he wants to keep it a little while, he has to erect a cold storage plant down there. I am afraid he could not do all that. That has to be done by somebody. When the produce of the farm comes into the cities it has to be received, it has to be stored, and we must get our distributive share of it at our basement doors the next morning. No, I have no objection to you farmers coming down and doing that in New York City if you want to. Come along, and I will shake hands with every one of you, and with your wives, and all of you, and be glad to see you. Of course, the thing has its difficulties, but I never saw any dividend obtained from cheap talk in this world yet. Solve it in some way if you can. You will never solve it by twitting and growling and denouncing, saying that this man is too rich and I am too poor, and all this. You are grown-up men, aren't you, and a pretty good-looking body of men, too, if you will allow me to say so. So let us have no baby talk. Your produce has to come there and somebody has to handle it.

If you had the parcels post a certain number of us in the city could get into communication with you in that way. We could get a barrel of apples of you and a barrel of potatoes. But I am bound to tell you that we have furnaces in our cellars and a barrel of apples would shrivel up inside of forty-eight hours. There are lots of difficulties in the way. We have to buy by the peck and the quart, and, of course, you know a whole lot of people down there are buying by the pint also. That is all that most of us can afford to do from day to day. So you would be sending us pretty small parcels by parcels post. You could deal direct with some of us, no doubt, but I dare say that a movement could grow and become effective by which the farmers of this state could establish their own agencies or their own middlemen in the city of New York and in the other cities of the state. Whether you would do any better than by the ordinary middleman, who is competing with his neighbor and doing the best he can for you, I do not know. I only know that that work has to be done down there by somebody. So now you get your heads together and just decide who it will be. I do not care a cent which way you decide. Whoever does it will make his living that way and I suppose will live from hand to mouth just like the farmer. We are not all so rich down in New York as some of you think. You look a good deal richer than some of the people that come in and out the City Hall every day; and you look as though you were better fed, too; and you look as though you went to bed at night and did not smoke too many cigars, which I have no doubt is so.

And now about the high prices. The middleman is also blamed for the high prices. The Lieutenant-Governor has just said that you receive only about fifty per cent. of what I pay at my basement door for your butter, for your apples, your cheese and your potatoes, and so on. Everything is not profit. A contented mind and a little philosophy and good health are worth all the wealth of this world, and a great deal more. The consumers say that the middleman gets too much and makes these high prices, and that you farmers on the other end get too much also and they are paying altogether too much. These complainers do not say anything to me about the things they sell, whether they are getting too much or too little. They want high prices, of course, and they are getting them if they can, but they do not want to pay high prices.

I think that much has been said about the high prices that might be left unsaid. There is much wild assertion on that subject. You have only to read any standard book on the precious metals and their production, say, Walker on bimetalism, or any you select, to know that the greatest periods of prosperity the world has ever had, from the landing of the Spaniard on this continent down to the present year, have been the periods of a great production of gold and of silver, when silver was money. High prices do not mean hard times. High prices mean prosperous times. Low and falling prices mean bad times, and some of you young men will live to realize what I am saying to you to-night. Prices now are high or fair, and rising, and the country is prosperous, and the world is fairly prosperous. But the time will come when prices will begin to drop, and they will drop with a jog each year. Down they will come with the regularity of one of those cars coming down the mountainside on cogs, just cog by cog; and then will be the crucifixion and the agony of everybody with your low prices.

I remember very well when everybody was complaining of low prices. Many of you remember it, too. My notion of the reason for high prices is not that there is so much rascality and cheating going on in the world, as some say, and the shoving of prices up by artificial means. The great cause that I see, and I have been saying it for many years in the city — but it is hard to get anybody to listen to you down there and that is why I was willing to come up here for one night — is the enormous output of gold, of metal money. Since 1883 the gold output has been going up bound by bound, year after year, until now the output is so enormous, about five hundred millions of dollars a year, that nothing like it was ever known in the history of the world. The output since 1883 totals about seven billion dollars. The time when this great output will wane is not in sight. There may be four or five men in London to-night, who by the most careful engineering reports know when the acme of the gold output in the South African mines will be reached. Their engineers have told them pretty near the time, and when that is reached, or soon after, the fall in prices will set in.

The gold production has been going up on one side of the cone step by step since 1883, and as it went up prices mounted with it with the utmost regularity. But the great output of gold will finally reach the top of the cone, the apex, and it will just pass over and begin to drop painfully slowly down the other side of the cone, and prices will drop with it, with the regularity of the drop in the output of gold, and then — I have no desire to be around about that time. Those of you who will be here will then be complaining not of high prices but of falling prices. No one can do business on a falling market. If you have to sell to-day for less than you paid yesterday it is only a question of time when you go out of business, isn't it? And that is what a falling market means. That is what low and falling prices mean.

And do you ask me why this depends on the output of gold? I think I can try to tell you. All I am saying is only by way of suggestion. You know, all of you know, much more about it, no doubt, than I do. But I can tell you this, that gold is only a mineral out of the bosom of the earth, like iron or steel. It is only a commodity, like corn and apples and potatoes, and as you increase the volume of any commodity it grows less valuable all the time, doesn't it? Potatoes were a dollar a bushel on Long Island this fall only because there was a scarcity of potatoes. When the volume grows and there are too many potatoes, or a great many, the price levels right down to that condition. So that as gold increases in quantity in the world it decreases in value. That is to say, it decreases in its purchasing power as compared with other commodities, so that a dollar is worth less when there is a great quantity of gold than it is when there is only a small quantity of gold. You can contract the gold of the world down to such a small quantity that a dollar will be worth a hundred times what it is worth to-day, and that conveys to you what my meaning is. A shorter way to express this complaint about high prices is that prices are not high but that money is low. Potatoes and corn and so on are not high, but money is low. The purchasing power of money is less than it was before this great quantity of gold was in the world.

But you now look incredulous at me and say you seldom see a gold piece and do not know what I am lugging gold into the thing for. "Gold? Gold? Why I haven't a gold dollar. What has it to do with me?" I am well aware of that, my friends. You have your bills, your paper money in your pocket. But gold is back of government money here and everywhere. Not only that, gold is the equation of all money. Gold is the equation of all values, prices and moneys, so that if you were to have a universal clearing all over the world and every debt and everything was cleared, in the last analysis the residuum of all that would be left would be a few gold dollars. It is the equation of everything. That is why I say "gold." Because it stands for all money. Now that is the chief cause for high prices.

Some say that there are other causes. Some say that our protective tariff is the chief cause of present high prices. I can only say I do not think so, although it does raise prices to some extent. Some say they would do away with it with one stroke. But do they know what they are saying? Rightly or wrongly, and there is a difference of opinion about it, we adopted a protective tariff in this country at the beginning. People have voted on it over and over again, and have voted in favor of it from the beginning of the nineteenth century down to the present time. We may have been mistaken, but, mistaken or not, we have built up that system, call it an artificial system if you want to, call it a mistaken system if you will, and far be it from me to enter into any dispute on that head here. Say of it what you will, it is our system, and to do away with it with one legislative stroke would disorganize everything in this country in one hour. I undertake to say more, that it would probably bring on a revolution in this country. Some things that exist in the body politic which are wrong cannot be abolished offhand. We have to move slowly. So that all we can do with such conditions which society has created is to lessen them by degrees, little by little, here a little and there a little, until we gradually climb down to the level that we want to reach, and no injury is done to anybody. Everything that is good is of slow growth, my friends, in this world. Do not go off with a notion that you can reform the world, or even the city of New York, in twenty-four hours.

You know all good growth is gradual. Such is the economy of Almighty God. How gradually the tree grows, little by little each year, until it becomes full grown, with its spreading branches. How gradually even the blade of wheat matures. How gradually these bodies of ours develop from infancy up to manhood or womanhood. And, if I may say so with reverence, how patiently the Almighty sat brooding over this world that we are on, for millions of years, before it was made fit for our habitation and use. And so it is in all things material, moral, political, and economic. The rule is of slow growth. We must do the best we can, and when we have a thing that is wrong we must wait the opportune time to fix it. If that column over there were rotten. some reformer would want to come and, as we used to say up in the country, yank it down right off, and probably let the roof down on all our heads. If it is rotten, it ought to be taken out, to be sure, but we must wait until we get another column that is better and then jack up the ceiling and take out the rotten one and put in the other one. That is the way we used to do at the raising bees when I was a boy, when we raised a house or a barn and put the beams up, and they do it yet. To the extent that the tariff does produce high prices, the changes must be made slowly and judiciously. Even a grazing bull tethered to a stake, who winds around until he gets his nose up to the stake, knows that he has to slowly unwind before he gets away from the stake again, in place of ripping his nose all to pieces trying to pull the stake up. And the politicians had better learn the same thing.

We have a great home market in this country. It is free trade between the states. And most of what is manufactured and produced in this country is consumed right here. We talk about our export trade. Why, the great trade of every country on earth is the home trade, whether England or any other place. Some want the tariff leveled off, so as not to produce high prices but raise revenue, and if it be necessary here or there to protect some industry that still has need to get on its feet and could not get on its feet without it, then they say protect it by a tariff. That is what people who talk that side of the question say. You farmers and others have complained also that these high prices that you all love so much, provided you do not have to pay them and provided you are receiving them only, are blameable to the trusts. But there, also, clamor is no use. We cannot make a thing so by getting up and saying that it is so. We have to look into it. Is there any trust among you farmers as to your farm produce that we are paying so high for down in the city? They tell me that there is no farmers' trust. Then tell me what makes your produce so high. It is worth while to begin to inquire what products are the highest in this country. Are they the products produced by the trusts or are they other products? That has not been analyzed for us yet. It will be interesting when these figures come out. And then again with regard to trusts, there are economic laws which prevent them from making their prices anything they see fit.

No doubt some of these combinations are inhuman and wicked in attempting to run prices up by combination, but they will all be dealt with in due time. They are just a passing phase, that is all. The tendency is to combine. But can they make their prices what they see fit? Well, now, let us see. We will take any trust you want. Or take a manufacturer, a big manufacturer who manufactures a certain article and then sells that product. That manufacturer has to buy the raw material, does he not, wherever he can get it? And then he manufactures it. When a trust becomes the predominant or the sole manufacturer of any product it has to buy the raw material; it manufactures it and then it sells the finished product to you and me and we pay for it. They say that it can run the buying price from the farmer or person who produces the raw material down just as low as it sees fit. But can it? Let us see. Just as soon as they run it down below what the farmer or producer can produce it for at a profit and live, the farmer or producer ceases to produce that article, doesn't he? He cannot produce it any longer because the price is run so low that it does not pay him to do it; it is a loss to do it. The result will be that people cease to produce that raw material. The next result will be that this manufacturer has to pay a higher price next year, and the next year, in order to stimulate people to produce that raw material again. So you see he cannot run it down below a certain point, and I will call that point, for the sake of convenience, the economic point. Just as soon as all the raw material that man grows and produces cannot be sold by him for enough to pay the cost of production and enable him to live, he stops producing it. He has to stop, and he then turns his attention to something else. So that when they go below that economic price in purchasing the raw material the price immediately goes up, and they have to pay more in order to get it at all and stimulate others to produce that raw material. So below that economic point they cannot go without injuring themselves.

The next side of it is that the trust can raise its price to the consumer up just as high as it sees fit, and make the consumer pay it. Oh, indeed, can it? Why, the economic law of these things is as fixed and inevitable as the rising and setting of the sun or the changes of the seasons. If the trust raises the selling price up too high, people stop buying that commodity, or they buy a quarter less or a third less or a half less. The sale of it falls off immediately and the seller has to cut his price down in order to sell his product. So there is another economic point above which the seller cannot go in raising his selling price. But between these two economic points, the point where he buys and the point where he sells, there is a pretty wide zone in which he can fluctuate the price. There is no doubt about that, as we all know to our sorrow. But that he can buy at any price or that he can dictate and make us buy of him for any price that he sees fit, is a fallacy. Do not allow any of your politicians or wise men to convince you of any such fallacious thing as that, because it is not so. Let us get our bearings and see where the evil is — and it lies in that zone, right where I have told you — and then we can deal with it more intelligently. But, my friends, these things will all work themselves out. I am not disturbed about the number of millionaires in the country. If you give us the common schools and educate the people and let them have the votes, I will put the votes up against the millionaires and win. If that is not so, our free government of manhood suffrage is an absolute failure. We will regulate all in due time. We cannot do it all at once, but we will do it and do it well. Some of the things that we are crying about as evils now may turn out not to be evils. That which one generation holds up as a great truth is often, to the people of the next generation, such a piece of folly that they have to wonder how the preceding generation ever believed it. When our children come to read about these great evils and the terrible fuss that we made over them and they see how easily they were solved, and how little they were after all, they will be astonished.

This country is not going to the dogs. No, sir. This country is in a high state of prosperity. We like to grumble and growl, and we like to listen to people who talk calamity. But let us ease our own minds up sometimes with the consoling conviction that things are not so bad, after all. Things are a great deal better than when I was a boy. When I used to clean out the cow stables I never dreamed of standing in the Assembly Chamber of New York State. I was terribly anxious, though, to know what was going to become of me. I had a notion that I wanted to do something besides hoe a great big field of corn with so many rows in it. But it teaches you patience to do that. Did you ever look at a big field of corn with the big, long rows, and then look at your hoe, and think of the first hill and then how many hills there are in that long row, and then how many rows and hills there are in this whole, wide field? But you go to work and you do one hill after another, and you learn patience, and you learn philosophy, and you get good health, even though you do not have the best things in the world to eat and drink. But I was somewhat disturbed about it. I had a notion I would like to try my hand at something else, so I wrote to Horace Greeley. Everybody who did not know what to do with himself wrote to Horace Greeley in those days. His paper was the only paper we had to read, the *Weekly Tribune,* and "What I Know About Farming" in it by Greeley. What he didn't know about farming would fill many books. He wrote back to me a letter which I could not decipher, but the whole family and the whole neighborhood finally made out the substance of it by getting a few words here and there, and I remember one expression in it. He wound up, after having told me to go West or to go to Florida or New Mexico, with these words, "But, whatever you do, do not come down here to this modern Babylon," meaning New York City. I made up my mind I never would go there, and when I left home I went as far away from it as I could, but without wishing it, in some way or another, I was down in the modern Babylon and there I am yet. I happen to be mayor of the modern Babylon, and I do not know what old Greeley is thinking about it to-night.

I say that to you farmers, not to amuse you or myself, but to add something to it and then quit, and that is this: Although your sons are growing up and writing to Horace Greeley or to me or to somebody else that they would like to come to the city, that they would like to give up farming, that they are tired of looking at those long rows of corn, I would say to you that you are earning the most honest living that can be earned on this earth. Do not leave it, even though the future does not look bright. I will tell you what to do. Begin to study farming. Go to the Agricultural College if you can. Go to the Agricultural Society, surely. Send to Washington or Albany and get the literature upon farming, and educate yourselves from it. I am sure if you do that there is a successful future for farmers in this state. That is what many of you are doing. But, on the other hand, there are many who are not doing it.

When I was a boy we kept on planting our own potatoes for seed year after year, until our potatoes ran down to be about the size of marbles and we did not know what was the matter. The same way we planted our own corn for seed, and our corn ears were reduced in size. In a little while, however, we learned enough to send away for our seed. Somebody came along with potatoes called Chili potatoes, and we planted them and we had potatoes bigger than our fists. You see we did not know, but we learned quickly enough. It was because our old seed had been bred and interbred until it was run out, and we brought in all this new seed and had great crops. Since that time you have learned hundreds of things. But, my friends, there is much else for you to learn. The European farmer is bringing things here that we want to learn. The best farmers that we have down our way are the Poles and the Bohemians. I saw them down on Long

Island cutting sections down into the earth and bringing up samples of the earth and putting them in glass jars, just as the old middleman used to run a spear into our butter tub and turn it around and pull it up with our butter on it. They are doing that down there and sending the samples off to Washington and having them analyzed. Then back comes the report telling them what kind of a soil it is and what kind of a fertilizer to use, and what crop is best suited to it. They follow these instructions and are prospering as farmers. Some of the native American farmers sat by and laughed and said, " See what the ignorant Bohemian is trying to do." The man that said that was sitting on the tavern steps. He thought he knew more than all the rest of them. But all the same it is only a question of time until the Bohemian has his farm, unless he turns over a new leaf. So I trust that the whole state, the farming population of the state, will educate itself and educate itself all the time and become scientific farmers, and then, my friends, your success will keep on growing.

THE LIEUTENANT-GOVERNOR: I am sure we are all deeply appreciative of the excellent and instructive address to which we have just listened. To me, as doubtless to you, the note of optimism running through it was very pleasing. It enables us to look to the future with more hope.

We have to-night a representative from the young but vigorous, progressive and growing nation to our north. It has succeeded in a marvelous degree in almost every line of human endeavor, not only in manufacturing, but particularly has it been almost a pioneer, you might say, in some of the best methods of farming and in dairy methods. From that country to our north, at great inconvenience doubtless to himself, there has come to us to-night a man who can talk from an experience gained from boyhood on the subjects in which you are interested. I have the pleasure of presenting to you as the next speaker, the Honorable J. A. Ruddick, Dairy and Cold Storage Commissioner of Ottawa, Canada.

THE CANADIAN FRUIT MARKS ACT

J. A. RUDDICK

I do not know that all of you will be interested in the subject-matter of my talk. However, I come here at the invitation of my old friend, Commissioner Pearson, whose career I have watched for many years with interest and with pleasure, and in doing so I feel that I am only returning, in a very small way, many of the compliments that we have received from the leaders in agriculture in the state of New York over on our side of the line; for, as long as I can remember, we have had, from time to time, various experts and leaders in all lines of agriculture over there to address our large agricultural gatherings.

I am to speak to you for a few moments, then, on some features of the Fruit Marks Act of Canada, the law by which we try to regulate the packing and marking of fruit, so that the man who buys fruit of a certain kind and grade will receive it and will find that the grade will be according to the marks.

The federal law of Canada which relates to the marking and packing of fruit was enacted in 1901 and amended in 1902, 1906, 1907 and 1908. It is cited as part 9 of the Inspection and Sale Act, chapter 85, Revised Statutes of Canada, 1906. The act covers all kinds of fruit offered for sale in closed packages, but, as a matter of fact, in its practical application it relates chiefly to apples, other fruits being commonly marketed in open packages. In giving you the substance of the act, I shall omit the purely formal sections as being unnecessary to an understanding of its principle.

INTERPRETATION

Section 319.

1. In this act a "closed package" means a box or barrel of which the contents cannot be seen or inspected when such package is closed.

2. The word "fruit" does not include wild fruit, nor cranberries, whether wild or cultivated.

3. "Culls" shall include fruit that is either very small for the variety, or immature, or the skin of which is broken so as to expose the tissue beneath, or that is so injured by insects, fungi, abnormal growths, or other causes, as to render it unmerchantable.

THE MARKING OF FRUIT

Section 320.

1. Every person who, by himself or through the agency of another person, packs fruit in a closed package, intended for sale,

shall cause the package to be marked in a plain and indelible manner, in letters not less than half an inch in length, before it is taken from the premises where it is packed:

(a) With the initials of his christian names, and his full surname and address, or, in the case of a firm or corporation, with the firm or corporate name and address;

(b) With the name of the variety or varieties; and,

(c) With a designation of the grade of fruit, which shall include one of the following four marks, viz.: "Fancy," "No. 1," "No. 2," "No. 3."

2. Such mark may be accompanied by any other designation of grade or brand, if that designation or brand is not inconsistent with, or marked more conspicuously than, the one of the said four marks which is used on the said package.

Section 321.

No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package and intended for sale, unless such package is marked as required by the provisions of this act.

GRADES AND DEFINITIONS

Four grades are established by the act known as, "Fancy," "No. 1," "No. 2," and "No. 3." The first three grades are defined by the act, but, as everything which does not grade up to the standard of No. 2 may be marked No. 3, it is obviously impossible to have a definition for No. 3, unless a still lower grade is recognized to include the culls.

I may say that, for commercial purposes, very few apples, or other fruit for that matter, are marked "Fancy" and No. 1 is generally looked upon as the highest grade.

The sections which relate to grades and grading are as follows:

Section 321.

No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package, upon which package is marked any designation which represents such fruit as of:

1. *Fancy Quality,* unless such fruit consists of well-grown specimens of one variety, sound, of uniform and of at least normal size and of good color for the variety, of normal shape, free from worm holes, bruises, scab and other defects and properly packed;

2. *No. 1 Quality,* unless such fruit includes no culls and consists of well-grown specimens of one variety, sound, of not less than medium size and of good color for the variety, of normal shape and not less than ninety per cent. free from scab, worm holes, bruises and other defects, and properly packed;

3. *No. 2 Quality,* unless such fruit includes no culls and consists of specimens of not less than nearly medium size for the variety, and not less than eighty per cent. free from worm holes and such other defects as cause material waste, and properly packed.

No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in any package in which the faced or shown surface gives a false representation of the contents of such package; and it shall be considered a false representation when more than fifteen per cent. of such fruit is substantially smaller in size than, or inferior in grade to, or different in variety from, the faced or shown surface of such package.

BRANDING FALSELY MARKED AND FALSELY PACKED

Section 322.

1. Whenever any fruit in any package is found to be so packed that the faced or shown surface gives a false representation of the contents of the package, any inspector charged with the enforcement of this part may mark the words, "Falsely packed" in a plain and indelible manner on the package.

2. Whenever any fruit packed in a closed package is found to be falsely marked, the said inspector may efface such false marks, and mark the words, "Falsely marked" in a plain and indelible manner on the package.

3. The inspector shall give notice, by letter or telegram, to the packer whose name is marked on the package, within twenty-four hours after he marks the words, "Falsely packed" or "Falsely marked" on the package.

FRUIT PACKAGES

Section 325.

1. All apples packed in Canada for export for sale by the barrel, in closed barrels, shall be packed in good and strong barrels of seasoned wood, having dimensions not less than the following,

namely: Twenty-six inches and one-fourth between the heads, inside measure; and a head diameter of seventeen inches; and a middle diameter of eighteen inches and one-half; representing as nearly as possible ninety-six quarts.

2. When apples, pears or quinces are sold by the barrel, as a measure of capacity, such barrel shall not be of lesser dimensions than those specified in this section.

3. When apples are packed in Canada for export for sale by the box, they shall be packed in good and strong boxes of seasoned wood, the inside dimensions of which shall not be less than ten inches in depth, eleven inches in width and twenty inches in length, representing as nearly as possible two thousand two hundred cubic inches.

4. When apples are packed in boxes or barrels having trays or fillers wherein it is intended to have a separate compartment for each apple, the provisions of this section as to boxes and barrels shall not apply.

The apple box herein prescribed is the same in dimensions as the box known on the Pacific coast as the "California Special" or the "Northwest Special," where it is used by some packers. The "Oregon Standard" box is ten and one-half by eleven and one-half by eighteen inches. The Canadian box contains two thousand two hundred cubic inches, while the Oregon box measures only two thousand one hundred and seventy three and one-half cubic inches.

BASKETS, BERRY BOXES, ETC.

Section 326.

Every box of berries or currants offered for sale, and every berry box manufactured and offered for sale, in Canada, shall be plainly marked on the side of the box, in black letters, at least half an inch square, with the word "Short," unless it contains when level-full as nearly exactly as practicable: (a) At least four-fifths of a quart; or (b) two-fifths of a quart.

2. Every basket of fruit offered for sale in Canada, unless stamped on the side plainly in black letters, at least three-quarters of an inch deep and wide, with the word "Quart" in full, preceded with the minimum number of quarts, omitting fractions, which the basket will hold when level-full, shall contain, when level-full, one or other of the following quantities: (a) Fifteen

quarts or more; (b) eleven quarts, and be five and three-fourths inches deep perpendicularly, eighteen and three-fourth inches in length and eight inches in width at the top of the basket, sixteen and three-fourths inches in length and six and seven-eighth inches in width at the bottom of the basket, as nearly exactly as practicable, all measurements to be inside of the veneer proper and not to include the top band; (c) six quarts, and be four and one-half inches deep perpendicularly, fifteen and three-eighths inches in length and seven inches in width at the top of the basket, thirteen and one-half inches in length and five and seven-eighths inches in width at the bottom of the basket, as nearly exactly as practicable, all measurements to be inside of the veneer proper and not to include the top band, provided that the Governor in council may, by proclamation, exempt any province from the operation of this section; (d) two and two-fifths quarts, as nearly exactly as practicable.

The Governor in council may make such regulations as he considers necessary in order to secure the efficient enforcement and operation of the act. That is the form in which such things appear, but in practice it means that the officers charged with the administration of the act make certain recommendations that are given the force of law.

The act provides that the Minister of Agriculture may appoint inspectors whose duty it is to watch for violations of the act, and to prosecute the offenders. No attempt has been made to inspect all fruit, and possibly not more than ten per cent. of the packages have ever been actually examined. The inspection is looked upon as a deterrent rather than an actual control.

The total number of inspectors employed in all Canada in 1911-12 was thirty.

The inspectors have the right to enter premises, or to detain for the purpose of making an inspection.

INSPECTOR'S RIGHT TO EXAMINE

Section 327.

Any person charged with the enforcement of this act may enter upon any premises to make examination of any packages of fruit suspected of being falsely marked or packed in violation of any of the provisions of this part, whether such packages are on the premises of the owner, or on other premises or in the possession of a railway or steamship company.

There are other sections which fix the penalties, and lay down the procedure, but as these are purely formal and routine, and have nothing to do with the principle of the law, I shall not weary you by referring to them.

HOW THE LAW IS ENFORCED

For the purpose of enforcing the law a staff of inspectors are employed at Montreal, St. John and Halifax during the shipping seasons. These officers are supposed to see at least a few packages out of nearly all consignments for export. They examine them in the wharf sheds as they are being loaded on the ships. When they find the contents of the packages are not up to the markings in the matter of grade, the packages are stamped, "Falsely Marked," or if the contents are overfaced they are branded, "Falsely Packed." In either case the packer whose name must be on the package is at once notified, and a report sent to the head office, where if the case is serious enough a prosecution is instituted. We also have inspectors located in the orchard districts and in the Northwest at the chief distributing points.

As a large quantity of fruit is imported into the prairie provinces from the United States, it may not be out of place to point out that imported fruit must be packed and marked according to the provisions of this law. It is treated exactly the same as the domestic fruit, except that we hold the importer responsible instead of the packer.

Of course, there are some difficulties in the administration of a law which deals with apples or other fruits grown under widely varying conditions. For instance, there is considerable difference in the size and color of certain varieties of apples grown in Nova Scotia or Prince Edward Island, as compared with the same variety grown in southern Ontario. The same difference appears when we compare the fruit from some parts of Ontario with that of British Columbia, or even when apples from two localities in the same province are placed side by side. This accounts for what may be considered a looseness in the definitions for the several grades. It was really necessary to arrive at a sort of compromise. It has been argued that there should be a size limit for apples in the several grades, but localities naturally differ in their views on that point. Personally, I am not in favor of a size limit in the definitions. There are so many varieties that the thing would be cumbrous, and I think it would give too much importance to mere size.

WHAT THE FRUIT MARKS ACT HAS DONE FOR THE APPLE INDUSTRY

Ten years ago, when this law was enacted, the apple industry seemed to be doomed. It was in a declining condition. The packing was so bad that no person would purchase apples without seeing them, even though they were offered as marked with a dozen X's, as they sometimes were. The risks in handling apples were very great and big margins were necessary. The result was that the grower often received very little for his fruit. There was very little planting being done and the old orchards were neglected.

It took some years of educational work, and some of the old-time, irresponsible packers had to be eliminated before we began to reap the benefit of this legislation. There is still much improvement to be made. You will occasionally find the smallest and poorest fruit nearer the center than the surface of the package, and packers sometimes strain their judgment to the extent of marking fruit No. 1 when it should be marked No. 2, but, on the whole, the marketing of fruit, especially of apples, has been almost revolutionized. Brokers will now purchase apples on the grade with a reasonable assurance of getting what they bargain for, because if they do not they have good, solid ground to stand on in obtaining redress.

The apple has become more of a staple, is safer to trade in and much better average prices have been obtained. Other conditions have contributed, but the satisfactory working of the Fruit Marks Act has been an important factor in the stimulus which fruit growing has received in Canada during recent years.

THE LIEUTENANT-GOVERNOR: I move that we extend to the last speaker, for his very instructive address, the hearty thanks of both associations, and for the trouble he took to come the long way he did to be with us to-night.

Seconded and carried unanimously.

THE LIEUTENANT-GOVERNOR: The next and last speaker of the evening is a man who has made his name almost a household word in recent years, and whose work has commanded the approbation and applause of everyone who has followed it and taken an interest in it. I have watched with interest and gratification the successful efforts which have been made by Mayor Shank in bringing the consumers into closer touch with the producers, to the benefit and advantage of both.

I now have the honor and pleasure of presenting to you the Honorable Samuel Lewis Shank, Mayor of Indianapolis.

REMEDIES FOR HIGH PRICES

SAMUEL LEWIS SHANK

I would rather have one old, common, everyday farmer than all the scientists in the world. If we keep on with " scientific " farming, we shall not have a horse, in a little while, that is not " shot," or a hog that will not die with the cholera. In New York you cannot drink water without going to the Board of Health. It may be all right, but I have had a fight about glanders. They killed six of my cows, for tuberculosis, and then found that they had the shipping disease they got at the stockyard.

I have a few remarks in regard to some of the causes of the high cost of living to-day. I will just go back a few years. Take my mother and father, for instance. My father wore a twelve-dollar suit of clothes; one-dollar-and-fifty-cent shoes; dollar hat; forty-nine-cent shirt; no collar; fifty-cent suit of underclothes; forty-dollar horse, with no pedigree; thirty-dollar buggy, with steel tires; a six-dollar set of harness, no brass; a thirty-five-dollar cow, which gave five gallons of milk a day; twenty-five-cent chickens, which laid every day; and a good watchdog, which cost nothing. I am my father's son, and this is what I have: A forty-dollar suit, tailor-made; five-dollar shoes; four-dollar Stetson hat; dollar-and-a-half shirt; white collar, changed every day; twenty-dollar pair of cuff buttons — they were given to me, but I have them just the same; my mare cost two thousand three hundred dollars, and she had a pedigree and more relations than I have myself, and when her father died there were two articles in the papers; she was burned up about a year ago, and there were two columns in the paper. I have a buggy that cost one hundred and twenty-five dollars, ball-bearing, rubber tires; thirty-dollar set of harness, brass-trimmed; hundred-dollar cow, great pedigree, gives a half-gallon at a milking; one dollar and twenty-five cents apiece for hens which never laid an egg since I got them, and a rooster with tins on his feet; then last but not least, I bought a dog for ten dollars, because he had a pedigree, one of these screw-tail pug dogs not worth one dollar and twenty-five cents as a watchdog.

Some Cornell University professor found that timothy hay can be bred, and the first thing you know farmers will be paying for pedigrees on hay. In New York City we find some ladies paying for pedigrees from the old country.

This is what father and mother had when they came to the city, seventeen or eighteen years ago: Old heating stove, cost ten dollars; coal stove, cost two dollars and fifty cents; furniture, one hundred dollars; old organ, worth twenty-five dollars; some dresses worth twenty-five dollars; corsets, costing two dollars apiece; hats, five dollars; shoes, two dollars. Mother went to the theatre once a year to see "Uncle Tom's Cabin," at ten cents a seat. The same woman now has a furnace costing two hundred dollars; coal at six dollars a ton; clock costing three hundred dollars; piano, three hundred dollars; furniture, six hundred dollars; music box, sixty-five dollars; Oriental rug in parlor, three hundred and fifty dollars; dresses, three hundred dollars; hats, fifty dollars; corsets, twenty dollars; shoes, that never fit, five dollars; and she goes to the theatre twice a week at one dollar and fifty cents each, three dollars.

We used to have our family dinners on Sundays, when we had our brothers and sisters at our house, and had roast beef, at ten cents a pound, potatoes, cabbage, turnips, sauerkraut, home-made, pie, coffee, hickory nuts, cracked on our own smoothing-iron, cakes, baked by mother, and if eggs were high there were no eggs in the cake. We had no help. To-day we have our dinners at six o'clock in the afternoon, and we have oyster cocktail and wine, grapefruit at fifteen cents apiece, soup, nuts, assorted and ready cracked, cottage cheese, minced ham, fried chicken, in February, strawberries at fifty cents a quart, potatoes à la mode, Welsh rarebit, cherries, pickles, olives, radishes, New Rochelle cheese, ice cream put in oranges, three kinds of cake, coffee, cream, tea or cocoa; then a ten-cent cigar, and generally after that a little poker game. Then you are sent home in your automobile at two a. m.

After I eat one of those "lunches" I am sick. My wife calls a doctor. He looks at me and says, "You have gastritis," or something like that. He charges me two dollars and fifty cents and gives me something. Before, father said it was stomach-ache, and they gave me a cent's worth of soda and some water. There is the difference.

Mother used to do her own work, ironing, washing and all. To-day you have a negro woman and her husband; another negro to attend to the furnace; another woman comes once a week to do washing and ironing; the darkey milks the cow and sleeps in the cellar.

In those days I think about seventy-five per cent. of the people worked and earned something and twenty-five per cent. were gentlemen. To-day there are about twenty-five per cent. producers and about seventy-five per cent. of us gentlemen.

The farmer wants to know why, in Michigan, he gets forty-five cents a bushel for potatoes, and in Indianapolis, one hundred and fifty to two hundred miles from there, people pay from two dollars to two dollars and forty cents a bushel for those same potatoes. There is a question I do not understand. I am not here to tell you why potatoes can be bought for forty-five cents a bushel from the farmer while the man in town pays two dollars and more a bushel for the same thing. Another thing I found out in my buying of potatoes was this: Oftentimes a farmer who has shipped potatoes to Indianapolis gets a telegram saying that the potatoes are not what they were supposed to be, and they cannot sell them at the price agreed upon. They want to "Jew" him down fifteen to twenty cents a bushel, and he has to take that or leave them on the railroad.

The way I got into the potato business was this: A man said, "I have a carload of potatoes which they refuse to take at the commission house." I went down and saw them and found as fine potatoes as I ever saw in my life. I sold that carload at seventy-five cents a bushel inside of the house. I would not sell for more, but kept it up until we sold fifteen carloads of potatoes. Potatoes were retailing at two dollars and forty cents a bushel. The day they came to Indianapolis they were all offering to take eighty to ninety cents a bushel for the same potatoes. I do not know why, but they did it.

Farmers were given twelve cents for turkeys which were twenty-five cents in Indianapolis. I telephoned some farmers and they brought them in and sold them for eighteen cents. The same way with chickens.

My theory is that every city should have a "purchasing agent," who should put up a bond to the city, and when things are high he should keep in touch with the conditions of farming communities that have those articles to sell, find out what they are willing to take for them, and ship them to the particular city, and sell them, taking out from the sales so much commission for transacting that business for the farmers. You will know when you ship them there that you will get what they are worth, and that the consumer will get them for a lot less money than now. I am trying to get the council to give me the privilege to get the farmer to ship his produce to some responsible person in Indianapolis.

Commission men, to whom you have shipped your goods, sell them to John Jones, and Jones sells them to somebody else. A great deal of the trouble is that the man in the legislature does not represent the farming community. He represents the men from whom he is elected, not the man who is interested in getting more for his produce.

My wife has twenty acres in the country. The other day she received a bill for twenty-five dollars for a tile ditch running down to the road. She did not get a cent more from the crop, but had to send twenty-five dollars for that tile ditch. Why? Because she is not getting the price she ought to get for the crops. There is no question but that the farmers need relief, and the city people who are buying their goods need relief. I do not know how to get it, but as long as I am Mayor of Indianapolis I am going to plug away at it. If I cannot do it by a purchasing agent, I am going to do it myself.

We have Jim Keats in Indianapolis, who is the potato king in Indiana, and he is worth three hundred thousand dollars to-day. There are only three ways to get money: To have it given to you, work for it, or steal it. Jim never worked for it, and never had it given to him. I am not here to say how he got it. He made three hundred thousand dollars in about fifteen years from potatoes, from the producer, the farmer. Now, I have no objection to his getting it; but, if I were a farmer, I should, and I would see that he did not get it in the future.

I suggest that the farmers go in together, have their own little storage house on the railroads, and keep stuff there, which they can ship to New York as it is needed. If we had these aids for the cities all over the country, we could find out which was the best city to which goods could be shipped.

I know you farmers do not get what you earn, and the people who buy your goods pay a big price for them. Mayor Gaynor said that gold was the cause of it. Prices were low during 1893, and the gold must have jumped over to the other side of that cone.

I am with the farmer and with the effort to buy goods cheaper in Indianapolis. I will keep on fighting the middleman as long as I am Mayor of Indianapolis. If you keep up the same fight they will have to go out of business or else sell goods at a reasonable price.

The meeting was then adjourned.

THURSDAY, JANUARY 18

MORNING SESSION

The meeting was called to order in the Assembly Parlor at 9:30 a. m. by President Pearson.

THE PRESIDENT: We called this meeting early in order to have the discussion which was postponed from yesterday. The most serious criticism, to my mind, that can be made of any agricultural meeting is that there was not sufficient opportunity to hold discussions. We do not want to have that criticism made of this meeting. Here is the opportunity, here are the experts, and all of us would profit by further information from them.

PROF. FRASER: What planter and digger does Mr. Nichols use?

MR. NICHOLS: The Robbins.

MR. BRILL: As to cooperation, have you a state charter, or is it incorporated under the state law?

MR. TALMADGE: I think it is advisable to do so, by all means. In our cauliflower association we attempted to operate without, but after two years we found we ought to incorporate.

MR. BUFFUM: I understood Mr. Talmadge to say they had some way of regulating transportation. We pay something like fifteen per cent. to the railroad, and would like to know how to lessen that rate.

MR. TALMADGE: Practically all our potatoes are sold to wholesalers in carload lots. We have a rate of seven cents a hundred from our shipping points out on the island to New York City. In less than carload lots I think the rate is eighteen cents.

MR. HODGSON: What per cent. does it cost to sell?

MR. TALMADGE: The uniform charge is three cents per bushel.

MR. LAWTON: Is arsenic and soda solution satisfactory at the price?

MR. NICHOLS: We are very well pleased with it; it has given entire satisfaction. We started in with about thirty and thirty-five cents. Now the price of paris green is down to sixteen cents.

My statement that we could produce and use this arsenic solution at one-third the cost of paris green was based on comparison with paris green. I think it is a little more inclined to burn the foliage, if you do not use lime. But we have had very good results. Our recipe is one pint of white arsenic to four pounds of soda, the arsenic to be boiled fifteen minutes, so that it will be sure to be dissolved.

MR. TALMADGE: You would not recommend using that without the bordeaux mixture?

MR. NICHOLS: I would recommend using the lime, anyway, if you do not use the bordeaux mixture; but some do use it with good results. We have prepared that solution for four or five years for our neighbors and they were all well satisfied with it.

MR. TALMADGE: I used that for a good many years, but always in connection with the bordeaux mixture. Some of our farmers try to use it without. I never tried to use it with lime alone. I know with the bordeaux mixture it is all right if you use sufficient bordeaux. It is dangerous, I understand, to use without bordeaux, but perhaps lime will answer as well to prevent burning the foliage.

MR. GILLETT: In our country we have abandoned both those and have fallen back on arsenate of lead, for three reasons: (1) It sticks closer to the foliage and does not wash off with the first rain, one or two applications lasting the entire season; (2) it stays in suspension in water better than paris green; (3) it is utterly impossible to burn the foliage with it. We are using arsenate of lead which can be bought in small quantities for ten cents a pound; in large quantities, a little less than that.

PROF. FRASER: Mr. Dollar said that the farmer knows less about the cost of production of his business than any other business man. I think that is a mistaken notion. I think you will find that very few men know just exactly what it costs them to do business. I would be glad to hear him support the statement.

MR. DOLLAR: I believe that any successful business man bases the knowledge of his business first on the cost of his product. Unless he does that he is not able to sell it at a price that insures a reasonable profit. It is a fact that the farmer knows very little about the cost of his crops to-day. We continue to sow crops of oats and harvest them simply because we have been in the habit of doing that, and when we harvest that crop we do not know whether it has cost us more than we can buy it for in the open market, or not.

A young man referred yesterday to the cost of the dairy cow as sixty dollars. I would like to see a man do that now with eighteen-dollar grain and sixteen-dollar hay. We have been studying that for a great many years, and it costs us more than double that to bring a cow to the age of production, two and a half years. Farmers do not know what cows cost them.

Mr. Haller: You know when you buy a cow what she costs, and very often you can buy good ones for sixty dollars.

Mr. Dollar: Yes, but the great question to the farmer to-day is the replacing of those cows. There have been two ways, to buy them or grow them on the farm. Especially in districts that are almost entirely dairy districts, the time has nearly gone by when we can buy the sort of cow we want from our neighbors. It is impossible, we find, in northern New York, to buy a good dairy cow unless we pay an enormous premium. Seldom can we raise a high-priced cow for anything like sixty or seventy-five dollars.

Prof. Fraser: The farmers show pretty well that they find out whether a thing is profitable or not. If it is not profitable they will soon go out of business. The men in the southern end of Livingston County stopped growing wheat because they found it was not paying. The statement that is going around that the farmer does not know as much about his own business as other men know about theirs is erroneous.

Only eighteen per cent. of our men in Livingston County are earning less than thirty dollars a month, after paying five per cent., whereas, in the rest of the state it is thirty-three per cent. In our own county we have more men making a good living in general farming than in any other part of the state.

Mr. Timmerman: The farmers in Montgomery County do not know the cost of milk, hay or anything else. I know, for myself, what it costs to produce the milk and feed the cows. I have asked many people about it and they do not seem to know anything about it; they do not know what it costs to raise a crop of hay, oats, potatoes, or even a quart of milk.

Mr. Findlay: I would like to ask Mr. Dollar what the cost of producing a quart of milk really is.

MR. DOLLAR: It is a fact that we usually do not know how much it costs to produce a crop. We have tried a system of bookkeeping on our farm, and still we do not know, at the end of the year, exactly what a crop costs us.

PROF. FRASER: Mr. Nichols says it costs him twenty-four and one-half cents a bushel to produce his potatoes. I do not see that he has allowed anything for his own time in that statement. Also I find that in our business there is a certain amount of overhead charges which do not seem to be included in this. For instance, our telephone and telegrams cost one dollar an acre. There is loss of time from wet days on a five-hundred-acre farm, which amounts to one dollar and fifty cents an acre. You will find a large number of those things which you will determine only by recording each day what you have done and charging it where it belongs. There is an item there of two dollars and fifty cents, which is a very good profit on an acre of ordinary farm crops. I would like to know a little more about that cost, because twenty-four and one-half cents and selling at forty-five makes people believe there is a very big margin there.

MR. NICHOLS: If we were making a specialty of potatoes and spending all our time, of course we would have to figure in some of those things, but we do other lines of farming; we are always busy.

PROF. FRASER: The point is that you have to pay these. You must pay for the upkeep of fences; and potatoes must take their share.

MR. NICHOLS: I figured that the cost of plowing and fitting an acre for potatoes, in the way we do, was so much, and that is all I charge for the potatoes.

PROF. FRASER: You are an awfully good man to do it at the price you have given us.

MR. NICHOLS: We do it. We put in last spring one hundred acres of spring crops. We did a great deal of our plowing in the fall, but we had thirty acres to plow last spring. One man, with four horses, did all the fitting of the one hundred acres and the thirty acres of plowing, and our crops were all in early. Of course, that man and team did some other little things, but that was the principal part of their work.

Prof. Fraser: What is your expense? How much are you worth a day?

Mr. Nichols: We are doing a great many things outside of raising potatoes, and it would not be fair to charge it all to potatoes. We are keeping a dairy of forty cows. We keep four or five teams and do a teaming business. We are taking in one hundred and fifty dollars a month for outside work. It would not be fair to charge the time of all of us, the year round, to the potato crop.

Prof. Fraser: Is it to be assumed that so much goes in for supervision under this?

Mr. Nichols: Perhaps there ought to be a little added to that amount for the cost of raising the potato crop. But, as near as my judgment will allow, I figure we are raising potatoes at that price.

Prof. Fraser: How much does it cost to store, put them down and pick them up again?

Mr. Nichols: Two cents a bushel. We can put them in for a cent a bushel and take them out for a cent a bushel; that is, saying nothing about shrinkage.

Prof. Fraser: Two per cent. shrinkage, if you have no loss. There is a cent gone right away on forty-five or fifty cents, and only a cent left now to handle them.

Mr. Nichols: In the fall our potatoes are sold at sixty-two pounds to the bushel. Some people sell them at sixty.

Prof. Fraser: I have looked into that potato question, and a good many men are spending eight cents to put them down and pick them up again. That is without any loss from disease. And they are spending from ten to fifteen per cent., in some cases, for shrinkage. Two per cent. is very good running. Ten to fifteen per cent. has to go, in many cases, under that cost. The idea is that we do not want the people to say they can raise them at twenty-five cents and sell them at forty-five.

Mr. Nichols: My estimate did not take in the matter of shrinkage, nor the matter of putting them in and taking them out.

Prof. Fraser: What is the average price for, say, five years, last March?

Mr. Nichols: Our average price for ten years was forty-five cents.

MR. TALMADGE: With us, the rent of land is one of the great items in the cost of raising potatoes. It should be figured in. Even last summer in one of our agricultural papers, the dean of the school up in Canton, in giving the cost of raising a crop of oats, omitted the rent of the land. It is misleading when there is no consideration taken in the cost of a crop for the use of the land. It should be figured in.

MR. TUTTLE: You do not figure what the crop cost you, because you charge so many things against the general farm operation and the other crops and the things that are consumed on the place. You are looking to the one crop as a money crop. You spent so much money to produce that crop, and you took in so much when you sold the crop; therefore, the crop was so profitable. That does not begin to tell the story.

MR. WHITE: We should not base the cost of production of any crop upon the larger yield. It ought to be based on the average crops.

MR. BURRITT: That is a very important point just brought out about averages. I know the most about apples. We have kept very accurate records for ten years on the cost of growing apples in a small orchard of about six acres. Our cost has varied from eighty-eight cents to one dollar and twenty-five cents a barrel, depending on the average yield, the high cost, of course, coming in the small-crop years. For the ten-year average our cost has been one dollar and eight cents. We can only get at what is really the average cost of production by keeping records over a long series of years. One year, or one crop, on one farm, does not tell it.

There is a good deal of misunderstanding, too, about the distribution of the different costs in production. Take the question of labor, for instance. The way we get at our labor is this: We take the total sum of money paid for the labor during the year, add to it the board of laborers and any privileges which they have. Then we keep the total number of hours worked during the year, on absolutely everything on the farm. The total number of dollars divided by the total number of hours gives the rate per hour. That should be distributed on the total number of hours on each crop.

We do that with incidental charges, such as telephone, telegraph, insurance, taxes, and all those things which are grouped together, and then distribute them to each crop on the basis of acreage, or animals, or number of hours' work on the crop. Machinery is charged in the same way. It is not fair to neglect those things in potatoes, and make apples pay it. Every crop on the farm must bear its proportionate share of this general expense.

PROF. FRASER: I am running a one-hundred-and-fifty-acre fruit farm; I can run a horse at ten cents an hour on a general farm, but I cannot run a horse for less than twenty-five cents an hour on a fruit farm. If I can hire horses and men at six dollars a day for that fruit farm I can make money. But, on the other farm, at ten cents an hour, I am all right.

MR. PALEN: What do you add as a reasonable profit before you sell your crops?

PROF. FRASER: Ten per cent.

MR. PALEN: Fifteen per cent. of the cost of the labor is added; then profit is added to that. One of the reasons the farmer does not come out so well as he figures is that he forgets that part of it.

THE PRESIDENT: The chairman of the Committee on Transportation, Marketing and Grievances is a man thoroughly capable of looking after matters of this kind. He is a lawyer of years' experience, and more recently has gone back to the farm, from which he originally came. Governor Dix has appointed him a member of the Food Investigating Commission.

Immediately after this report is read he will present a paper on "A Practical Producers' and Consumers' League"— Mr. Ezra Tuttle.

REPORT OF COMMITTEE ON MARKETING, TRANSPORTATION AND GRIEVANCES

EZRA TUTTLE

Your Committee on Marketing, Transportation and Grievances submits the following report:

The recommendations made last year by this committee were favorably received by the society and the principal subject emphasized in all addresses, papers and discussions was the high cost of living and the poor returns to the producers. Your committee repeats the recommendations made last year:

1. Empower and direct the State Commissioner of Agriculture to collect and disseminate the fullest possible information relating

to agriculture, agricultural labor and the markets for agricultural products.

2. Give to the Commissioner of Agriculture power and authority of supervision over all sales on commission within the state.

3. Bond the commission men, and require them to furnish shippers true accounts of sales, with names and addresses of purchasers.

4. Organize a system of coöperative marketing to bring producers and consumers into closer business relations.

5. Advocate a general parcels post to assist in direct marketing.

Your committee further recommends that public markets should be established in Greater New York and in other large cities of the state, on a scale commensurate with population and the important interests of consumers and producers.

We further recommend that a markets commission for the state be created by law to investigate conditions, establish public markets where most needed, and have general supervision over all markets established by the state, whether operated directly or by an operating company.

A PRACTICAL PRODUCERS' AND CONSUMERS' LEAGUE

EZRA TUTTLE

In presenting this paper on "A Practical Producers' and Consumers' League," I do it with great hesitation. This problem is so great that it seems presumptuous for me, or any other one man, to present a solution of it. But we heard last night from the Lieutenant-Governor that the time of discussion was about closed, and the time for action was now. We have discussed this subject until it is worn threadbare and until we are all convinced of what is wrong. Now, what are we going to do to right it? Until we have some scheme for righting it we will not do anything. So I am going to present to you a scheme. I hope it will be radical enough to excite some opposition, because that opposition will mean discussion and agitation, and out of that discussion and agitation we are likely to get something that will be helpful.

If this were a meeting called in some city of twenty-five thousand to one hundred thousand inhabitants to consider the establishment of a public market, where producers and consumers might come into direct business relations, no doubt there would be a large and enthusiastic audience, and the scheme probably would be considered wise and feasible. But in advocating the establishment of such markets in New York City and in other large cities of the state, where the needs are vastly greater than in the smaller cities, the scheme may be called visionary, impracticable or even socialistic.

While there are so-called public markets in New York City, they are in no sense producers' and consumers' markets. The city owns the property, but it is rented to private retailers or jobbers, the same as any private property would be, and they conduct their business solely for their own profit, without regard to either producer or consumer. At the Gansevoort Market, in Manhattan, and at Wallabout Market, in Brooklyn, there is out-door space allotted to farmers with their teams and wagons, but farmers here do not trade with consumers. They have to deal with retailers, jobbers and middlemen. The locations are not suitable for retail markets, and they in no degree solve the question of how to bring producers and consumers into direct relations. The system, such as it is, is full of temptations for favoritism, graft or the boycott. The producing areas are too far removed from the city of New York to permit of marketing any considerable amount of produce by wagon. You must go twenty miles or more out in every direction before coming to even market gardening on a large scale, and these products constitute a very small part of the family food supplies. Practically everything to feed the five million inhabitants of New York City, and about as many more transients, comes by rail or boat, and the high cost of living with poor returns to the producers is a tremendous problem now pressing for solution. Let me enumerate some of the causes for the high cost of living and the poor returns to the producers:

1. High rates of transportation, especially by express.
2. Inadequate and poorly located terminals and receiving facilities.
3. Cartage, storage and repeated handling.
4. Commission men, jobbers and middlemen generally.
5. The multiplicity of retailers, and the unnecessary expense of retail delivery.
6. Waste, delay and deterioration.
7. Bad debts.

8. Improvidence of consumers in methods of procuring household supplies, hand to mouth.
9. Glut in the market.
10. Poor market information.
11. Unreliable quotations.
12. Speculation, "corners," cold storage.

The Remedy. Bring the producers and consumers into direct business relations by the establishment of public markets under the control of producers and consumers, eliminating the commission men, jobbers and speculators. Save trucking, handling and storage. Inaugurate the system on a scale commensurate with the population and the demands of a district, city or town. The field must be occupied from the first, or a "freeze out" will be certain and effective. Collect and disseminate reliable market information and quotations. How can it be done?

The Plan. The state should do what is important for the public welfare, if it cannot be done adequately and effectively by private enterprise and capital. The state has the power of eminent domain and may acquire private property for public use. Individuals and business corporations have not this right. It is practically impossible for private persons to acquire suitable property for the markets that would meet the requirements of New York City, and, if they did, the enterprise would be only private business on a large scale. In order to establish public markets of sufficient number and size to supply the demands of the consumers of New York, it would be necessary for the city or state to provide suitable property, and buildings, located in districts within reasonable distance of the population to be served. This would require at least one district market for every one hundred thousand of population, and, without counting the outlying districts with more or less scattered population, would mean about ten district markets in the borough of Manhattan, ten in Brooklyn and two or three in the Bronx. Queens and Richmond, for the present, might be omitted. These district markets could be established for sums varying from fifty thousand dollars to one hundred and fifty thousand dollars each for land and suitable and substantial buildings. In addition to the district markets it would be necessary to have two or three large receiving terminal warehouses with cold storage equipment, and at least one manufacturing establishment to do canning, pickling and preserving, to take care of the surplus and what would otherwise be waste.

The expenditure of the large sums of money required to provide the land and buildings for an adequate chain of district markets and other important adjuncts need not be an unprofitable investment for the state, but, if it were, the benefits derived by the whole body of producers and consumers, comprising practically the entire population of the state, would justify the expenditure.

An Operating Company. With the plant provided, how shall it be operated? A producers' and consumers' market company should be incorporated with a capital stock of, say, five million dollars, divided into shares of five dollars each, to be subscribed and paid for in cash, no person being permitted to hold more than twenty shares. This company should lease for a term of years from the state all the market property and appurtenances at a yearly rental not to exceed five per cent. on the total investment. It should be limited by its charter to net earnings not to exceed ten per cent. on its cash capital. It should be under the supervision of a markets commission to be appointed by the Governor of the state. It should have a representative board of directors and an expert executive committee. A general manager of wide business experience and recognized capability should be employed to manage the whole enterprise. Each district market should have its superintendent and general working force. The supplies in each district market should comprise all foodstuffs. Shipments by producers should be made, as directed, to the various district markets or to the terminal warehouses, and other supplies should be purchased, as nearly as possible, at the initial point of production. Prices would be fixed and quoted daily by the market management according to the general state of the market, with information regarding supply and demand.

A system of cash discounts on the amount of goods purchased by consumers should be arranged to attract trade, to be paid upon the presentation of purchase checks in amounts of twenty-five dollars, more or less. A purchase check, showing the amount purchased, should be given each customer with each purchase. A charge for delivery should be made to encourage the carrying home of supplies. Prices should always be fixed at the lowest possible point, consistent with fair returns to producers, fixed charges, and operating expenses not to exceed ten per cent. per year on capital.

Prices should be uniform at all markets, and deliveries should be made only within specified district boundaries, to avoid duplication of delivery service. Minor refrigerating, canning, preserving and pickling equipment should be installed in each district market.

Capital of Operating Company. The capital of the operating company should be furnished by producers and consumers. It does not seem appropriate at this time to go into details regarding the method of raising this capital, but when we consider that more than five hundred million dollars' worth of foodstuffs is consumed each year in the city of New York, and that one per cent. of this amount would furnish sufficient working capital, and that producers will be saved about ten per cent. (the usual commission), besides receiving a higher price for their produce, and that consumers will save at least ten per cent. on the cost of food supplies, it seems feasible to devise some way, that shall be workable and not burdensome, to secure from these two classes the necessary working capital to conduct a business established and managed by them and for them.

I would charge all shippers five per cent. on gross sales and all purchasers five per cent. on all purchases for account of capital stock until every producer and every consumer was the owner of one share of stock. Thereafter the purchase of capital stock, to the limit of twenty shares, should be encouraged but made voluntary. By this method producers of foodstuffs in every part of the country would become interested, and every consumer doing business with the markets would also become a cooperator in the enterprise. There would be no danger of keeping either producers or consumers from doing business with the markets, as it would result in a financial benefit of from ten per cent. to thirty per cent. to each party.

State aid, under the control of the markets commission, would probably be required at the start, but ample safeguards and security could be provided, so that all money or credits furnished, in a short time, would be fully repaid and discharged. This scheme must not be regarded as a private enterprise or business for the enrichment of the stockholders or promoters. It is strictly cooperative marketing, direct from the producer to the consumer for the benefit of both, and that means for the benefit of all. This is properly a governmental function. The state builds canals, roads, armories, hospitals, prisons, schools, parks, and many other public works for the benefit of a part or all of the commonwealth, when, from the nature of the enterprise or the conditions prevailing, it would be impossible to accomplish the desired purpose through private capital. The present condition of the high cost of living in cities and towns, and the inadequate and ever-decreasing returns to the producers, has come about by the opportunity afforded to private capital to multiply and complicate the machinery of transportation, manipulation, distribution and speculation. The middlemen fix the price to be paid the producer and the cost to the consumer. They would be more than human if they did not fix the price at the lowest possible point that would keep the producer working and the cost at the highest possible point that would keep the consumer from starving.

Bitter opposition to this plan will be made by the whole horde of middlemen, speculators, storage men and distributors generally, including the retailers of all foodstuffs. They will see the end of their career as parasites, and unnecessary, expensive and wasteful intervenors in the business and domestic economy of the people. Such opposition must be expected, and it is the strongest argument in favor of the reform. All reforms have met, and always will meet, opposition from those who derive profit from existing conditions. But the time is ripe for this reform, the people are aroused, the press of the country is sounding the death knell of the middlemen and food speculators, and the unscientific, unbusinesslike, expensive and wasteful practices now in use for the transportation and distribution of food.

The government, national, state and municipal, is awakened and active. Committees and commissions are investigating and seeking a remedy for existing evils. City officials, clubs and organizations of workingmen and farmers are trying various expedients to bridge the chasm between producers and consumers. Is it not fitting that the Empire State should lead the way and set an example to the country, by enacting necessary laws, and proceeding in an adequate and intelligent manner to relieve the heavy and unnecessary burdens now artificially imposed upon practically all the people of the state? Let me repeat and emphasize the necessity of taking hold of this matter in a large and comprehensive way. Any small and partial experiment would be foredoomed to failure, especially in the city of New York. The reasons will be apparent on a moment's consideration.

Vast amounts of produce of all kinds are constantly shipped to New York to be sold on commission without restrictions in regard to price. Upon the opening of these markets, this produce would be sold for little or nothing and would come into the hands of consumers, for a time, at prices absolutely ruinous to the producers. The battle would be a fierce one, the producers would furnish the ammunition and the middlemen would fire it, with no direct cost to themselves. But if the markets were of sufficient number and capacity, established on a firm financial basis, and backed by the power and influence of the state, the result would be speedy and certain. Producers would soon see that they were being used as "the cat's paw to pull the chestnuts out of the fire" for the middlemen. Shippers would no longer send goods to be sold on commission, but would ship to the markets and join the ranks of the Producers' and Consumers' Union.

I would advocate a wide and aggressive propaganda of direct marketing, bringing the plan, with its objects and advantages, to the attention of consumers and producers and manufacturers of foodstuffs throughout the country. There should be an active and sustained campaign of education and cooperation conducted throughout the state, especially in the larger cities. The public press would gladly assist. Speakers and organizers should visit every section of the state, to secure the interest and support of the farmers, and to form cooperative shipping organizations. This work should also be carried on in the South and West, in fact, over the whole country. In the meantime, the state through its markets commission should be acquiring the necessary property and erecting the appropriate buildings, and the operating company should be incorporated, under a special and restrictive charter, subject to the approval of the markets commission, and in a year or two a condition of preparedness would exist that would make the movement irresistible and its success assured, with all its attendant benefits and advantages.

Could the state, through its proper officers and representatives, engage in a more worthy and beneficent undertaking? Would not the glory of wisely and honestly inaugurating such a system be greater than the conquests of war? Would not the millions of people in this state and in other states sing the praises of a party or an administration that had the foresight and the courage to emancipate the people from their present condition of commercial and economic slavery?

Mr. Fulton: This paper is extraordinary, and, I think, deserves extraordinary attention. It is revolutionary, I know; call it socialistic, if you like.

Mr. Dillon: Some years ago we were selling milk on the farm for one and one-fourth cents per quart. At the same time I was paying eight cents a quart to the Bordens in New York City. The Mayor said last night that there was a certain relation between cost of production and the price of consumption; that one had to bear some relation to the other, because of the law of supply and demand. I was never able to find it in those figures.

I am on an executive committee of a company in New York. It is obliged, being an insurance company, to keep a certain amount of its funds in what is called liquidating property. The other day we ran onto the Borden stock. As near as we can find out it never put more than two hundred thousand dollars or two hundred and fifty thousand dollars into its property. It has a capital stock of thirty millions. That stock is paying eight per cent. We bought twenty-five thousand dollars' worth of that stock at one hundred and twenty-five dollars a share, twenty-five per cent. of a premium on that thirty-million stock. If the Bordens have been able to do that on thirty millions of stock in just selling milk, there ought to be some margin for what Mr. Tuttle suggests concerning a committee to handle the products of the entire farms.

The President: The next two papers bear very directly on this subject. The first speaker will give us the experience of the Boston Cooperative Milk Producers' Company. The next speaker will give us the experience of one of the most successful cooperative exchanges in the entire country.

I will call upon Mr. Stanley H. Abbott, president of the Boston Cooperative Milk Producers' Company, who will tell us about their experience with the Sherman Anti-Trust Act.

EXPERIENCE OF THE BOSTON COOPERATIVE MILK PRODUCERS' COMPANY WITH THE SHERMAN ANTI-TRUST ACT

STANLEY H. ABBOTT

I should be very glad to digress, if time permitted, and tell you something about our work, something about our successes, as well as our failures. I have been connected with the milk producers' work in some capacity or other, as an officer of the organization, for eleven years. It gives me great pleasure to come here and tell you something about it, even though I refer especially to the thing which has been, as I regard it, one of its misfortunes, rather than its especial success.

The federal government saw fit last spring to investigate the Boston milk situation, with the result that the grand jury returned indictments, not only of the several leading dealers, but also of the secretary of the Boston Cooperative Milk Producers' Company. These indictments are still pending and no one can forecast the outcome. The indictment which relates to our secretary is that, in September, 1907, the defendants, mentioning the several contractors and Mr. Hunter, our secretary, "did meet and did confer and did agree upon uniform prices to be paid milk producers." The specific occasion mentioned is at the time when a rise of seven cents per eight and one-half quart can to be paid milk producers was secured. At the same time the various dealers generally made an increase of one cent per quart to family trade in the city. Mr. Hunter is indicted solely as a representative of our company. No other charge of any kind, whatsoever, is made against him or any other member of our company. The federal authorities seemed to have considered this all that was necessary to convict him of violation of the Sherman Act. The penalties attached, as is well known, may be fine or imprisonment or both, in the discretion of the court.

The outcome of this particular case is perhaps of minor importance so far as the probable penalties are concerned, but it is very significant as relating to what our organization stands for and what it is trying to do, and I am of the opinion that should our representative be found guilty and be sentenced on this charge that the matter will seem of vital importance, not only in New England but to all farmers throughout the country. If a body of men by their delegates can no longer "meet" or "confer" with the concerns who have been the customary buyers of their goods, much less make price agreements therewith, without placing themselves in jeopardy, times have indeed changed, and, in my opinion, not for the better. Furthermore, the existing indictments are furnishing the contractors an unanswerable excuse for the policy of dealing no longer with any organization but only with individuals themselves, to the evident disadvantage of the latter.

The milk shippers of New England have had continuous and effective organizations, under one name or another, for about forty years. Aside from looking after the grievances of its members and promoting good methods and practice, this company has acted through its officers, making or assisting agreements for the sale of the milk of its members, maintaining and, whenever possible, advancing the prices upon which said agreements between shippers and buyers were based to meet so far as possible the cost of production. Although the actual membership has never been more than one-third of the five or six thousand milk shippers over railroad lines and although the acceptance of its arrangements was purely voluntary, this work has vital influence and value and was so recognized by the majority.

Its main resources have ever been the influences its officers have been able to exert by means of reason, argument or persuasion brought to bear upon buyers of milk. They have also had another power, the ability to exercise control of the supply, a power, which, however, has been seldom used and then only when other methods failed. I will not trespass upon your patience to speak of the results of this work and of the record which has been made. The agricultural press of New England is fully familiar with it and would, I am sure, substantiate any claims I might make. I will only say that its work has always been along lines laid down by the Grange and maintained by that and other kindred organizations and has, as we can readily show, saved large amounts of money to the farmers of New England.

I believe that neither the New England farmer nor his representative has anything but respect for law, or wishes in any way to interfere with it or embarrass its free course and procedure. That our secretary should be included in the indictment referred to, which strikes so deeply at the right of farmers to combine for self-preservation and defense, a right which seemed to us elemental, thoroughly righteous and indispensable, has certainly filled us with amazement and dismay. We have often heard that "in union is strength" and "united we stand, divided we fall." Has it then come to this, that the advantages of combination may be denied that class of citizens most in need of its benefits, though they have been most backward in availing themselves thereof? If we may no longer exercise any control of the sources of supply lest we be in restraint of trade, or make agreements or meet or confer for that purpose with those who may happen to be the only men or firms equipped to handle our product, what course is still left open to us? We will, no doubt, be assured that in due time the course by trial of the various indictments will decide the questions involved, but we realize that this may be an indefinite time in the future.

You may be aware that agriculture in New England along legitimate lines is decadent. Farms are being occupied merely as the summer homes of the wealthy, and many once well stocked are now the scenes of but small operations. Dairying, which should be the basis of all successful farming in a country like ours, is less and less popular, and the sources of milk supply are fast receding to greater distances. We have constantly striven for what we believe to be the real welfare of the milk farmers of New England and have done what we could to stem this current and maintain living conditions in the ways indicated. As showing the feeling in other parts of the country, I venture to quote the resolutions passed by the Chicago milk shippers in relation to these proceedings. In transmitting these, their secretary, Mr. Grier, says, "We all heartily support you in your efforts and believe you are bound to win because your cause is right."

"WHEREAS, The milk producers of New England have for some time been engaged in a strenuous struggle with the large milk distributors in the city of Boston for fair and living prices for their milk products, and

"WHEREAS, Recent developments have shown that there has been discrimination made on the part of the railroads in behalf of the large milk distributors of the city of Boston, and

"WHEREAS, Recent investigation likewise has shown that there has apparently been an understanding between the large milk distributors of the city of Boston to defeat the legitimate efforts of milk producers to secure fair and reasonable prices for their milk products, and

"WHEREAS, The courage and fortitude of the New England milk producers has been an inspiration to all their colleagues throughout the United States; therefore be it

"*Resolved,* That we, the directors of the milk producers' association of the Chicago dairy district, in meeting assembled, hereby express our high regard for and confidence in the milk producers of the New England States and extend to them our hearty, cordial sympathy and moral support in their efforts to secure fair and reasonable prices for their milk products.

"*Resolved further,* That we regret that an indictment has been returned against Mr. William A. Hunter, secretary of the Boston Cooperative Milk Producers' Company, believing, as we do, that the indictment returned against Mr. Hunter suggests the punishment of the victim whose only offense consisted in defending himself against the unlawful attack of others.

"*Resolved,* That a copy of these resolutions be sent to the Boston Cooperative Milk Producers' Company and also a copy spread on the minutes of the meeting of the directors of August 23, 1911."

I believe it is wholly wrong to blame those responsible for these proceedings. The Attorney-General and his subordinates have only discharged their sworn duty in enforcing the laws of the country and no favoritism should be shown any class of people, whether they be farmers' societies, labor unions, or corporation trusts. But we do urge upon the farmers of the country that they see whether or not their just and essential liberties are threatened by this law and, if so, that it be amended so as not to forbid a service so essential to a class of people who cannot secure what is their rightful due in any other way.

I ask you to consider where is the justice in educating us and telling us by means of colleges and experiment stations how to produce our products more cheaply and economically and then deny us the means whereby we can market that product in such a way as to secure a price commensurate with the cost of production? It seems to me that this is something that needs to be considered. If amendments to the Sherman Anti-Trust Act should be brought into Congress to the effect that, for the purposes of the act, any restraint of trade whatsoever shall be called unreasonable restraint, so as to further narrow and make binding and literal the application of the law, it seems to me that the farmers of this country should see to it that any such amendment is defeated. I understand that there are men that will go to their constituents for election to Congress on that platform, stating that they, if elected, will support an amendment to the Sherman Anti-Trust law of exactly that nature. It seems to me that the farmers of this country should think twice before they put themselves in any such predicament.

The suggestion that I would make concerning cooperation is that the only solution of the problem in our large cities is one of two things. Either combine the large distributing agencies under one head, subject to federal supervision; or else put the matter under state or municipal ownership. I think you are up against that dilemma. I am aware that in some of our cities municipal conditions are not such as seem to greatly encourage building up a new set of public servants; but I am an optimist along these lines; I believe we can see the dawning of a better day so far as the purifying of our municipal and state and federal politics is concerned.

A number of years ago Mr. John J. Ingalls was a senator to Congress from Kansas. Mr. Ingalls said at one time, "The purification of party politics is an iridescent dream." Mr. Ingalls went down to obscurity in the latter part of his career; he faced the setting rather than the rising sun. But, in the outlook for the future, I see, and I am sure most of us will see, the dawning of better things when we have such men at the head of our large cities, men of such integrity and honesty of purpose as Mayor Gaynor, of New York, and Mayor Shank, of Indianapolis. In them I see the dawning of better things. I believe the day is not far distant when the city or the state or the nation can assume the control of the public utilities, of which I believe milk will be one. The reason that the milk problem has to be handled in some such way is that there is no other way of getting around the enormous cost of milk distribution.

President Eliot, of Harvard College, stated that in the short street in which he lived there were six competing teams doing a milk distributing business to family trade. He said when he, in his capacity as one of the overseers of Harvard College, was buying the supplies for Memorial Hall it was very apparent to him that they were paying nearly twice as much in his family for milk as they were able to buy the milk for the supply of Memorial Hall. There is the whole thing in a nutshell. The tendency of increased competition will perpetuate that ineconomy in distribution and the overhead and fixed charges.

In one of the suburbs of Boston eight teams are doing competing business on a street a quarter of a mile long. Especially do the dealers in certified milk find it difficult to get around without charging a large price, because the custom of a wagonload of certified milk may make it necessary to drive an enormous distance to get rid of a comparatively small load.

A director of a cooperative creamery, which is working on cooperative and independent lines, which is providing its milk, as well as butter and eggs, directly to consumers in the city of Boston, tells me they are astonished to find the cost of distribution so high. He said, " Whereas, one team in the little town of Milford can distribute forty to fifty cans of milk in a day to a little family trade, one team can only distribute something like twenty to twenty-five cans per day in the city of Boston, and at a much greater cost for wages and incidental expenses."

This subject hinges very vitally upon that great and paramount subject, the future of the dwellers in the country of the Eastern States. I think you are all aware that farming conditions throughout New England and the Eastern States are precarious. I wonder if you all realize how much the cities have been depending upon the country for their best blood and for the men who have gone from the country into those cities to build up its industries and stand for all that was best in its social and business and educational and political activities? And I wonder if you have realized what the possible decadence of the country life means, not only to the country but to these cities? I think we must look at it in a broad way, and feel that to the solution of this problem is due the best work we are capable of, and that we must see to it that the financial conditions — financial opportunities — in the country are such as shall offer sufficient inducement to the best of our young people to stay on the farms and continue to find their homes and make their living there, in order that the country shall continue to represent what is best and most typical and most American.

THE PRESIDENT: I want to say that the president of this society, for one, feels overwhelmed. Never in his experience has he been called upon to preside over sessions where such tremendous issues have been put forward.

We have another paper along this same line. The next speaker represents one of the most successful of the cooperative efforts. Mr. W. H. Ingling, general manager of the Monmouth County Farmers' Exchange, Freehold, N. J., will now address us.

COOPERATIVE MARKETING

W. H. INGLING

The principle of cooperation is no new discovery, but it is one of the fundamental laws of the universe. We have always been conscious of its continuous application in all the realm of nature. The farmer conforms to its requirements in tilling his soil and producing his crops, yet he has not applied it to the business end of his occupation. He has noticed that it is the dominating influence in all business enterprises, as well as in all political affairs, but for some unknown reason he has refused to apply it in marketing his produce. He seems perfectly willing to hand this part of his business over to an alien and pay him liberally for his work. In other words, he is satisfied to take forty-one cents for what the consumer pays a dollar.

One has said, "The American farmer and fruit grower has so long stood alone, thought, planned and struggled alone, in an atmosphere of individual independence, that it is hard for farmers collectively to stand together." Is that a true statement? We think so, but it was more true a few years ago than it is to-day, for in many sections the farmers are taking advantage of organized cooperation, which, if loyally supported, will bring to the growers, through proper distribution, the highest market value for their various crops that can be obtained under the present conditions of trade. We say under the present conditions of trade advisedly, because, while the farmer can increase the price of his produce by cooperation, there is a limit beyond which he cannot go.

Proper distribution, we believe, consists in the farmer placing his goods as near to the consumer by his original sale as is possible. Whenever he fails to do this he injures himself. He cannot place them directly in the hands of the consumer through the present channels of trade except in a local way; neither can he quite reach the consumer by any association or exchange he may be able to organize. Yet to reach the consumer is his ultimate object, because without him his goods have no value.

How can he do it? He can organize a cooperative exchange that will place his products with the dealer only once removed from the consumer, which will enable him to greatly increase the receipts for his crops. With an organized exchange of his own to sell the products of his farm, as well as to buy what seeds, fertilizers, etc. he needs, he has placed his business in shape to deal directly with the consumer as soon as he sees and takes advantage of his opportunity. The consumer's necessity should cause him also to organize a cooperative buying association through which he can purchase all of his requirements at a large saving to himself. The farmer's exchange could then sell directly to the consumer's exchange, thus benefiting the farmer as well as the consumer. There are many of these cooperative buying associations in England which are successfully operated to the great benefit of its members and the amount of whose business aggregates many millions of dollars per year.

Let us now examine the conditions under which the farmers in our country have been working for many years in their efforts to obtain the best price for their produce. As we are more familiar with the situation in Monmouth County, New Jersey, we will take that as a fair example of the general conditions that have existed in the past.

We take it that our farmers in New Jersey are at least average representatives of the class throughout the country, and yet they have been allowing the buyers for years to fix the prices of their products. No other business allows this. The farmer somehow, no matter how much care, anxiety and unceasing toil may have been required to raise his crops, fails to appreciate these efforts when he comes to market them. His interest ceases when he carts his goods to the station, for he accepts the price offered by the local buyer and permits him to find the consumer at the farmer's expense. He does not fix the price when he buys his groceries or when he purchases a suit of clothes; the owner of the groceries or suit does that. Yet the farmer owns his produce but does not fix the price. We had some experience this fall in buying seed potatoes that will illustrate this statement.

There being no farmers' exchange, of course, we had to go to the dealer, who had the seed we wanted, in one of the western counties of this state. We wrote him for prices and he quoted us a price that we thought was a little more than the market, so we offered a price somewhat lower, but in the end we had to pay his price. Now the point is, he fixed the price he paid the farmer and also the price for which he sold them to us. The farmer had nothing to say about it in any way. Do you think that the farmer can come to his own under such conditions?

The old way of reaching the consumer, the system as practiced in New Jersey, was as follows: The farmer delivered his potatoes to the local buyer at his price. This local buyer sold them to the jobber in New York or Philadelphia at about ten cents per barrel advance. This jobber sold them to another jobber, we will say in Chicago, Cincinnati or some other city, at an advance of ten or fifteen cents per barrel. This jobber sold them to a wholesaler or small jobber in his own town or one contiguous at an advance of possibly ten or fifteen cents more per barrel. The wholesaler sold them to the retail grocer at another advance, and the retail grocer sold them to the consumer at twenty-five to fifty per cent. advance. To this must be added the freight of perhaps forty or fifty cents per barrel. No wonder the consumer complains of the high cost of living under such a system of distribution.

But that was the way we were doing it in New Jersey. It is true our potatoes reached the consumer in the end, but five sets of dealers handled them before the user for whom they were grown received them and everyone who touched them increased the cost without any benefit to the farmer. He had the forty-one cents and the consumer had paid his dollar; the system had the other fifty-nine.

These were the conditions in Monmouth County, New Jersey, in 1906. Our farmers in the Grange began to discuss the situation, trying to find some solution of the unsatisfactory condition existing in marketing their produce. They saw that the local buyers were apparently making a very good living by handling their potatoes and they believed the farmers ought to be their own middlemen and sell their own goods. During 1906 this resulted in only talk, but the discussion kept the subject agitated and in 1907 a few of them started in to put a plan they had formed into operation.

This was to have one of their number keep in touch with the nearby markets and see if the buyers were paying the market price. As you may naturally suppose, this did not amount to much and was soon abandoned. In the winter of 1907-8 some twelve or fifteen of the Grange members made up a sum of money to investigate the methods of the Eastern Shore of Virginia Potato Exchange, which had been in successful operation at that time eight years and was doing a business of one million five hundred thousand dollars. A committee was appointed to go to Olney, Virginia, their headquarters, and see what could be learned about their methods. This committee made a very optimistic report and, as a result, a meeting of the farmers was called, January, 1908, which was largely attended. The manager of the Virginia Exchange was present and addressed the meeting, explaining its mode of operation, amount of business and the beneficial results to the farmers on the eastern shore. At the close of the address, subscriptions to the stock were taken to the amount of two thousand dollars and committees were appointed to see other farmers and receive their subscriptions. The matter was pushed forward vigorously and successfully and culminated in the organization of the Monmouth County Farmers' Exchange, which was duly incorporated under the laws of New Jersey, March 3, 1908, with an authorized capitalization of one hundred thousand dollars, twenty thousand shares, with a par value of five dollars each. The charter is very broad and we are privileged to do any kind of business in any state in the country.

Our county is one of the largest producing sections for potatoes in the state. Under normal conditions, the output would probably be about three thousand five hundred to four thousand cars of white potatoes, possibly more. With this field of operation open to him, why should not the farmer organize an exchange and market his own produce, buy his seed potatoes, as well as grass seed, paris green, baskets, barrels and manufacture his own fertilizers, when he can do it at cost? In fact, why should he not be his own middleman and save the expense entailed by the old system?

As I have stated, our exchange was organized to take advantage of the situation as it lay before us, to operate for the entire benefit of the farmer and to reach out in every part of our territory and help every other man who would come in with us to reap the advantages we enjoyed.

With a membership of three hundred in 1908, to-day our stockholders number one thousand and seventy-five. Our paid-in capital at the beginning was seven thousand dollars; to-day it is seventy-four thousand three hundred and fifty dollars. The par value of our stock is five dollars per share; to-day it cannot be bought for less than seven dollars per share and is limited to one share to new members. What a power there ought to be with this number of intelligent farmers working together for the betterment of each other. By standing by their organization, they can have anything they want that is right for them to have. Talk about the poor farmer in New Jersey no longer; he is coming to his own. The mortgage has been paid and he brings his family into town no more in the "one-horse shay," but rather do you hear the "honk" of his horn, bidding you to step aside and let him pass, for he will not take the dust of the road any longer.

The farmers of this country produce nine billion dollars' worth of goods per year. Why should not the greater part of these be marketed by organizations controlled by the farmers and thereby reduce the expense to a minimum? Suppose, by organization, we could succeed in reducing the cost of marketing the immense crops by only five per cent., this would be a saving of four hundred and fifty million dollars per year; it would be worth looking after, would it not?

The cooperative spirit is abroad in the land; its activity is energetic; its scope is diversified; where tried, it is producing manifest results; it is knocking at the doors of this great commonwealth; it is saying to you all, "Try me, try me honestly, fairly, and I will do you good." Will you heed the cry?

Perhaps it might be of interest to you if we should show you how the details of our business are managed and the results that have been obtained.

We have a board of fifteen directors, elected by the stockholders annually, one director for each loading station. These directors appoint the officers and have general supervision over the entire business. Our general office is in the center of the town of Freehold, Monmouth County, New Jersey. Our loading stations extend thirty miles west along the Pennsylvania Railroad and twenty miles east on the Central Railroad of New Jersey. We are connected with all of our stations by telephone, as well as with all cities and towns in the country by long-distance telephone and Western Union and Postal Telegraph companies. During the heavy shipping season, we have a special office of the Western Union Telegraph Company located in our general office. Thus the manager is in direct communication with all parts of the country and with all of our agents and inspectors at every loading station of which we have twenty-five, with additions in prospect of three or four more the coming season.

The members deliver their potatoes, or other products, to our agent at the stations and receive a receipt for them and they are loaded into the cars for shipment. The agent about three o'clock in the afternoon notifies the manager of the number of cars he is likely to have loaded by shipping time, which is about five o'clock, in our territory. The general manager and his assistant, in the meantime, have issued their quotations to all of our salesmen in the principal cities, either by telephone or telegraph, and generally by three o'clock the output of the day has been sold. On a steady market orders continue to come until the day closes. Frequently during the past season we had from twenty-five to forty carloads ordered beyond our supply, and, of course, these had to be shipped the following day. When the business is over for the day the prices obtained are averaged and the farmer credited with the average price for the same grade and variety of stock, no matter where he may reside. Bills of lading are sent to the general office so that the invoices and drafts may be sent out the same night. The detailed reports of each station reach the office the next day, when shipments are verified and the farmer is credited for his goods. The price is given to each agent every morning for the goods shipped the day before, and the agent notifies the farmers.

We trust that we have made plain to you the manner in which our business is conducted, as well as the great benefit the principle of cooperation may be to all farmers if loyally supported.

Now, just a word as to the results of the four years' work of our exchange. Beginning with a capital of $7,000 and a membership of 350 in July, 1908, our first year's business amounted to $454,414.11. We shipped 1,000 cars containing 203,939 barrels of potatoes and packages of fruit and vegetables. Our seed potato sales amounted to $39,965.45. It was estimated that we saved to our members about $55,000 in that year.

Our second year's business was $508,504.74, an increase of $54,090.63 over that of 1908. The shipments were about 1,200 cars, containing 241,731 packages of potatoes, fruit and vegetables, an increase of 37,792 packages. Our seed potato sales were larger than in 1908 and our fertilizer was about $30,000. Our membership had increased to 500, and the capital stock was now $31,275 and the net profit amounted to $6,702.53. A dividend of 5 per cent. was paid. It is estimated that our members realized at least $60,000 more for their products because of the influence of the exchange.

During the year 1910, we shipped 485,488 packages, about 2,575 cars, more than twice as many as the year before, and 39,818 more than in 1908 and 1909 combined. Our total sales were $917,562.64, We handled 20,000 barrels of seed potatoes, and paid our members an average of 49 cents per bushel for their potatoes the season through. Our fertilizer sales were 2,200 tons valued at about $63,000, all mixed in our factories from the best materials and without a pound of filler of any kind. Our members, besides getting goods of the highest quality, obtained them at a saving of $2 to $5 per ton. Our membership increased to 800 and the capital stock to $49,370. The net profits were $12,552.15. A dividend of 5 per cent. was declared. The direct and indirect influence of the exchange no doubt netted our membership at least $100,000 more than they would have received without it.

Our shipments for the year 1911 were about 2,518 carloads, containing 487,280 packages, an increase of 1,792, notwithstanding the fact that our potato yield was about 20 per cent. less than in 1910. In addition, our sales of fertilizers were 3,233 tons, valued at $100,000, an increase of 1,033 tons. Our seed potato business was about 27,000 barrels, valued at $85,000, an increase of 7,000 barrels over the previous year. Our total business was $1,499,500.99, exceeding 1910 by $581,938.35, and 1908, our first year, by $1,045,086.88. The average price paid the farmer for his potatoes, including round and long stock, was 89 cents per bushel. The estimated extra amount received by the farmers on account of the influence of the exchange was $125,000. The membership increased the last year 245 and we have now 1,045 stockholders. The capital stock has reached a total of $74,245, an increase of $24,875. A dividend of 5 per cent. was paid on January 1. The net profits were $17,496.51. The condition of our exchange to-day is as follows:

Capital stock	$74,245.00
Surplus	16,831.47
Undivided profits	7,612.75
Total	$98,689.22

We have a building and a set of wagon scales at twenty of our loading stations and three large fertilizer warehouses, with about eighteen thousand square feet of floor space, situated in such a way that almost all of the members can reach them without having to freight their goods. With this capital and the facilities for doing business, the outlook for our exchange, we think, is bright and worthy of emulation by the farmers of this great state.

We have endeavored by this brief outline of the principle of cooperation to show you what it will accomplish for the farmer if honestly applied, and have held up before you a fair example of its application and what it accomplished for your brother farmer in the state of New Jersey. What it has done for us it will do for you if you will organize an exchange or association. Select your best farmers for your board of directors and appoint the best man for manager you can get. With this beginning and a loyal support of the members, success will surely attend your efforts.

THE PRESIDENT: I think everyone will agree that the matter presented this morning has been so important that it would be unwise to close it up before adjourning.

MR. TUTTLE: This last paper was one of the best papers of these meetings, for the reason that it was concrete. This question is just as important to the consumer as it is to the producer, and just as important to the producer as to the consumer, and neither the producer nor the consumer working alone can solve these difficulties. We must work together. It is not fair for the producer to tell the consumer how much he shall pay for what he gets. Neither is it fair for the consumer to tell the producer how low he must sell his products. But if we could have a disinterested, or, better, a mutually interested distributor, representing both the producer and the consumer, and the producer and the consumer were the people who made that organization and ran it and did that business, then we would have a complete circle that would include only the persons most interested, and it would not be necessary to go through so many middlemen.

In my paper I made this a matter of state operation or activity rather than a city operation, the reason being this: If the matter of these markets were solely a city matter, it would be conducted almost wholly in the interest of the consumer. The citizens of the city and the citizens of the country are equally important to the welfare of the state. If this work cannot be done by private capital, it is the function of the state to step in.

MR. SCHRIVER: We all understand the radical features of Mr. Tuttle's proposition. Before it can become operative, however, it will undoubtedly be trimmed and prepared for practical operation. It is an easy matter to theorize on almost any subject, but when you come to execution and administration other elements appear which you did not anticipate. In order to get this business somewhere, so that we are on record as proposing to do something, I suggest that we adopt Mr. Tuttle's paper, and that we subsequently give direction as to what course shall be taken with it. Let us put ourselves on record as being somewhere and being somebody going toward some end. I, therefore, move that we receive in a very commendatory way Mr. Tuttle's report.

MAYOR SHANK: In answer to Mr. Tuttle's remarks upon the state having control, I want to say that in Indianapolis I am advocating such a position. We have a good market, but no producers are on that market. However, a purchasing agent, employed by the city, could keep in touch with the different cities. We will hunt up the consumers to buy goods, and we will hunt you gentlemen up through the city purchasing agent. We would, through the purchasing agents, consume every potato and peach you could bring there. If it were not for a commission merchant in my council, we would have a person in Indianapolis acting as purchasing agent in order to reach you. Other cities in the West will take care of that proposition if we can get them.

THE PRESIDENT: It seems to the chair that Mr. Schriver's motion that this report be received and commended, is eminently proper. That, of course, would not necessarily commit the society to every detail. The chairman of this meeting feels at the present moment that he would be willing to be committed to every detail, he has so much confidence in Mr. Tuttle and was so much interested in the paper as presented. However, in the matter of such far-reaching importance, it would probably be unwise that any organization should receive a paper of this kind and at once adopt it within an hour or two, without providing for a longer consideration.

MR. TUTTLE: I wish to call attention to the fact that my paper was an entirely distinct matter from the report. I regard the paper as a radical one, and I would not expect this society to adopt it without any consideration. But the report, it seems to me, might be adopted as the report of the Committee on Marketing, Transportation and Grievances.

The paper presented by Mr. Tuttle, "A Practical Producers' and Consumers' League" was adopted without protest. The report was then adopted.

THE PRESIDENT: I introduce to you a man who has done wonderful work in our sister state of Ohio in introducing better things along agricultural lines, Secretary A. P. Sandles, of the Ohio State Board of Agriculture.

THE PRODUCER AND THE CONSUMER

A. P. SANDLES

I congratulate you upon your splendid program. A master hand made it. Your meeting last night was a splendid testimonial of the interest in agriculture in New York, but I am not surprised. We of the Middle West used to look upon New York State as being great in many things but not in agriculture, but since Commissioner Pearson has been coming to our meetings, we have found that New York State is great in agriculture, and that it has good farmers.

I think the last address will prove very beneficial indeed to farmers in New York State. It is easy enough for some of us to find fault and show where the weak places are, but it takes a master to apply the right remedy. The speaker explained not only the theory but the practice made use of down in New Jersey.

The call of the nation is agriculture. Humanity is manacled to the " Bread Line " or " Belly Line " by chains that will not break. Hungry men have but little respect for law, and may join the mob. Other nations have learned that high prices and unsatisfied stomachs are tokens of decay and decline. The glitter, glare, and glamor of the gay, gaudy, gilded city is the candle which lures the human moth into its belly. By this sign the producing army is depleted, while the consuming army is replenished. Some who work beneath the roof must go out and toil beneath the sky. To-day the bell of progress rings throughout the nation. Agriculture is having the pains of a new birth. It is no longer in the cradle or bound in swaddling clothes. There is a new time, a new man, a new woman, a new way, and a new machine to bless the twentieth century. Old ways may have been good in their way, but are now passing away. The world is no longer flat, the moon is not cheese, Satan is not adorned with a tail, and the steamboat does not scare the fish out of the river. The scales are falling from eyes. Brain and science are now mixed with work, sweat and dirt. Experiment station and college invent fertility. Common sense and the lessons of experience are chiding us for having robbed our soil of its productive powers.

Gibbon, the historian, aptly remarked that, "Agriculture is the foundation of commerce." Railroads now realize, more than ever before, the force of Gibbon's logic. Railways everywhere are giving effort and encouragement to the cause. Railway industrial agents are now a part of the official railway corps. Agricultural trains, run free of charge, for the purpose of encouraging better methods and increased production, are now the fashion. The cities are giving more encouragement than ever before to the cause of the farmer. Great newspapers now have space to discuss rural problems at length. Chambers of commerce are becoming the champions of intensive and improved tilling of the soil. The schoolmaster is now teaching the fundamental principles of the soil and its products. Legislators of state and nation have awakened to the needs of ninety million people, and are enacting wise legislation, and giving increased appropriations. The signs of the times are good.

New York State is to be congratulated. Its new activity along agricultural lines will bring blessings to all its people. New York is the giant among all the states. What it does is keenly observed by all the rest. The West and Middle West have long been alive to the need of agricultural activities. Not until recently, however, has the great Empire State been considered among the foremost in promoting the new agricultural awakening. But under the guidance of the master hand of Commissioner Pearson, New York now has a front seat at all our national agricultural meetings.

The era of high prices does not necessarily bring prosperity to our country. On the contrary, abnormal prices usually bring hunger and cold to countless thousands. Prosperity is measured by the yardstick of the difference between receipts and expenditures. Prosperity, as a rule, is cheap dollars, with diminished purchasing power. So long as the price on the things we have to buy increases equally with, or exceeds, the price on the things which we have to sell, whether they be farm products or labor, prosperity has not come to us.

Governments should hand out as many favors to the producer as they do to the consumer. Legislation has tended more toward the consumer than the producer. If the producer wants the parcels post, should the consumer deny it to him? If the producer wants good roads, why should we not help him to get them? Good roads are as much to the farmer and more than paved streets are to the city man. The national government spends millions of dollars on rivers and harbors and public buildings in cities. Why not have the government aid the man who plows and farms the earth, to secure some of the comforts and joys of living?

Hotel keepers are considered close buyers and good business men. Recently I mailed an information blank to hotels located in many cities of New York State, asking for prices paid for some of the staple articles of food. The results were surprising. I did the same thing in Ohio, and results were also surprising. Hotel keepers in some of your New York cities pay twice as much for the same article as do others. Following are some of the variations:

	MINIMUM	MAXIMUM
Creamery butter, pound	$0 20	$0 41
Country butter, pound	23	37
Eggs, dozen	40	53
Potatoes, Irish, bushel	90	1 75
Canned peas, dozen	1 00	1 44
Sweet milk, gallon	17	28
Buttermilk, gallon	8	24
Apples, bushel	67	1 50
Sirloin, pound	16	25
Tenderloin, pound	20	40
Bacon, pound	15	22
Pork chops, pound	12	16
Lamb chops, pound	12	22
Turkey, pound	22	30

These prices were asked for about the middle of December last. The reason for the wide variation is not disclosed. Perhaps some of the above prices are wholesale and others retail. Some hotel keepers complain that there are agreements among dealers to keep prices up, and a few dealers blame the farmers for being in a trust to rob the consumer, but up to this time no farmer has been discovered who will plead guilty to this charge.

One lesson is taught by the above figures, viz.: That if the producer is making even a small profit selling at the above minimum, somebody is making a good profit when selling at the maximum. Is it the middleman or the producer?

Information blanks were mailed to housewives living in many of the cities of New York State, asking the prices paid in their home markets for staple food products. The variation is much greater than the hotel prices. Following are the extreme high and low prices, as reported in the answers to my questions:

	MINIMUM	MAXIMUM
Creamery butter	$0 34	$0 45
Country butter	30	40
Eggs, dozen	20	60
Corn meal, per 100 pounds	1 70	4 00
Potatoes, Irish, bushel	75	2 00
Sweet potatoes, bushel	1 50	5 00
Gasoline, gallon	11	20
Sweet milk, gallon	20	36
Buttermilk, gallon	08	40
American cheese, pound	16	24
Apples, bushel	40	2 50
Sirloin, pound	16	25
Tenderloin, pound	14	50
Ham, pound	12½	25
Bacon, pound	16	30
Lamb chops, pound	16	28
Spring chicken, live, pound	09	20
Turkey, live, pound	13	26
Maple syrup, gallon	1 00	1 60
Coffee, Mocha-Java, pound	25	48
Sugar, loaf, pound	08	12
Sugar, granulated, pound	06½	08

Just why the woman in Hudson, New York, can buy Mocha-Java coffee for twenty-five cents a pound while the woman in Penn Yan, New York, pays forty-eight cents, is a question not clear to me.

How far is it from producer to consumer? Is the distance between the raw material and finished product too great? How far is it from an ear of corn to corn flake? From the fat farm steer to hotel tenderloin? From the egg in the haymow to the dining-car omelet? From a Chester-White in the pen to a pork chop in a New York restaurant? From moonshine in Kentucky to a Manhattan high ball? From Mary's lamb to a suit of clothes? From a farmer boy to a railroad president or mayor of New York?

Hominy, such as mother used to make out of corn, costs less than a cent a pound. Corn flake, at ten cents a pound, has no more nutrition than God put in the corn that made the pound of hominy. Naked hominy is eaten without trimmings, while corn flake must be adorned with sugar and cream, and the cost of living climbs. The cost of living is with ourselves. The men who study our follies, fads and fancies increase the price of corn from the penny to the dime.

According to Dr. Wiley, the producer gets a cent and a half a pound for wheat, which, sold in the form of pies, cakes and bread, costs the consumer sixty-six cents. The pound of wheat had as much food value in its natural state, as it had after being translated into pastry. Between producer and consumer somebody multiplied the raw material by forty-four. Out of the sixty-six cents paid by the consumer, the producer gets a cent and a half for giving birth to bread. The consumer pays big wages to some one who knows how to multiply by forty-four.

The fat steer leaves the farm at five cents a pound. It brings five hundred dollars when sold on the menu card of a great hotel or dining-car. From producer to consumer are many milestones along the highways of business and commerce. The old farm hen cackles her gladsome song when she adds her mite to the wealth of the world, but she would mourn over the cold-storage, dining-car omelet, if she knew it was sold singly for almost as much as the farmer gets for a dozen eggs at home. The ambitious Chester-White, sold by the farmer for twenty dollars, brings two hundred on the tables of a fashionable downtown restaurant. Kentucky moonshine, sold from the stump at twenty-five cents a gallon, brings fifty dollars when it gets into good society. From Mary's lamb to a suit of clothes is best described by S. W. McClure, secretary of the National Wool Growers' Association. He says: "I paid $30 for a suit of clothes. Investigation into the total cost discloses the following: 9 pounds of raw wool at 17 cents, $1.53; making cloth, $1; tailor for making, $14. Total cost of labor and material, $16.53, leaving $13.47 to be divided between wholesaler and retailer."

The farmer should mix as much brain with his business as any other person does in any other business. Good wages can be made by finding out all you can about the business you are in. That is the best reason for all farmers to attend such meetings as are now being held in Albany. Here are some suggestions, which, if followed, will do the farmer no harm: 1, good seed; 2, good drainage; 3, good cultivation; 4, good crop rotation; 5, intelligent live stock breeding; 6, better bookkeeping on the farm; 7, beautifying the home and country; 8, greater interest in public affairs; 9, study of better business methods; 10, demand for better public highways; 11, as many conveniences inside the home as outside; 12, cooperation and knowing where to find the best market for products; 13, maintaining a high standard for country schools; 14, beautifying the country school and church grounds and preventing eyesores; 15, demanding just and wise legislation, instead of poor garden seeds, from the national lawmakers.

I was unable to get home market prices paid to farmers and producers in New York State. I did secure such prices, however, from several hundred Ohio farmers and the prices they receive varied as much as the prices paid by the consumer to the retailer for food products. When the first price paid to the producer is compared with the last price paid by the consumer, the difference is ample evidence to convince those most interested that the producer and the consumer are too far apart.

Both producer and consumer pay a severe tax and penalty by not dealing directly with each other. In many instances this is not possible. But better prices to the producer would tend to intensify farming and encourage more people to remain on the farm and keep it from wearing out. Increased production per acre would offset any decrease in price that might thereby result to the farmer. Many reasons are given by New York housewives for the high cost of living, among which are the following: 1, combination of dealers; 2, middlemen; 3, extravagance; 4, trusts; 5, too many stores; 6, credit system; 7, tariff; 8, greater desire for luxuries; 9, buying small package goods; 10, union labor organization; 11, housekeepers not inclined to work as much as formerly; 12, lack of good farmers; 13, high freight and express rates; 14, increase of gold and money per capita; 15, poor management; 16, labor scarce and high; 17, hiring of baking, sewing, laundry and washing; 18, poor trying to keep up with rich; 19, supply not equal to demand; 20, buying in small quantities; 21, too much entertainment and not enough work.

One woman from Penn Yan writes entertainingly, as follows, in answer to the question of "What is the cause of increased cost of living?" "Greater luxury. I live in the same house that I did fifty years ago. Then we had two fires and our own water. Now, our home is heated from cellar to garret. The bathroom with many faucets causes a big water tax. We cook by gas at one dollar and fifty cents per one thousand feet. Fifty years ago we never heard of grapefruit, Malaga grapes, Mayonnaise dressing, consommé, and expensive articles of diet. Our amusements are more expensive, as well as our dress, perhaps not in the single article or amusement, but in the greater number of both. I am not a pessimist, but we live in a fast age and I enjoy it."

These are some of the ailments and earmarks of progress made by the consumer and our population generally. Some can be cured. Others will have to be endured. It is the period of transition. The world is at a new threshold. The cost of living is largely with ourselves. Production is not swift, and is outrun by population and consumption. The wage earner is between the millstones of middleman and combination. The middleman and commission man make more profit in a few days from the products of the farm than does the farmer in many weeks. Eliminate the parasites, if there be any. Those who create wealth should not be denied generous reward.

Some of the above-mentioned are matters of reform, while others may properly be considered matters of legislation. Common sense would prove a panacea for many of our ills. The producer is vitally interested in the welfare of the consumer. The reverse is equally true. The producer must have some one to devour and digest his products. The consumer must have some one to furnish garden "sass," so long as there are appetites to satisfy. There will always be need of some legitimate middlemen. If middlemen cooperate instead of compete with each other, it is a hint to the farmers to do likewise.

Farmers need to improve the quality and standards of their products to the highest point of excellence possible. Community unity will prove advantageous. When any particular county or community becomes noted for some product of great excellence, that community will make good profits and receive ample reward for its toil. Buying and selling together will often bring satisfactory results.

In Ohio I am called the "Interrogation Point." I find the variation in prices out there very surprising. I asked the farmers what price they received in their home markets for corn, oats, wheat, potatoes and market animals. The average price of corn per bushel varied thirty cents between the counties, wheat, twenty-three cents, oats selling for eleven cents more in some counties than in others. Potatoes sold for fifty-four cents a bushel on the same day that they were selling in other counties for one dollar and seven cents a bushel. The farmer is not as good a business man as he ought to be. I asked the hotels what they were paying. I found a great variation in prices. It is up to the producer and consumer to invent better business methods.

Rome was once strong, and had a race of vigorous, courageous men. In Rome to-day you will find beggars. That is the price the Romans paid for not giving attention to some of the economic questions of government. It is not men who have great wealth, and issue stocks and bonds, but the men who solve some of these great living problems that will be benefactors and whose pictures we ought to hang upon our walls. No nation was ever destroyed by farmers. It is always in the cities where are hung out the red lights and danger signals. The first time I went to New York City I stopped at one of the good hotels. When I looked over the menu card, I discovered that the prices were not "excursion" or "home-seeker's" rates. One item on that bill was "extra porter-house steak, $4.00." I could not help thinking of the time I lived in the old log cabin out in Ohio and bought two calves and made a yoke of oxen out of them for four dollars. Your great City of New York is a tremendous institution. You have more people in that city than we have in the state of Ohio. But the farmers have to feed those people down there. If you do not feed them they will make you trouble. Get the best bargain you can, but feed them you must. If you do not, they may join the mob and do violence. The farmers feed the cities.

Ohio has a law which provides that agriculture must be taught in the public schools. According to ex-Congressman Tawney from Minnesota, we spend two million dollars a day for militarism in this country. That is fourteen hundred dollars a minute. This sum would build a lot of good roads. The country must be filled with strong, patriotic, prosperous, home-loving men and women, or battleships and armies will not avail anything. Experiment stations and colleges of agriculture will shoot farther than heavy guns. The average cost of the standing army is nearly two thousand dollars for each soldier. Our teachers and preachers do not cost us much more than half that sum. Uncle Sam can afford to give attention to his army of tillers and toilers, as well as to his army of buttons and braids. It seems to me that not only our rivers and harbors, but our inland interests should receive some of the benefits of national legislation. I do not care how many forts we have, or how many battleships we have; if we do not have the country filled up with prosperous, patriotic citizens, our army, our navy, our battleships, and our forts will not amount to anything. It is justice, and wise legislation we want, and not so much militarism in times of peace.

You had a great meeting last night. Not all were farmers who were there. I believe a lot of business and professional men came to that meeting just to get into good society. In Ohio our best and keenest men take an interest in these matters, because it is agriculture, after all, that makes the old world go; it is the farmer in the field that plows and farms the earth that has a seat on the cornerstone of prosperity.

The meeting was then adjourned.

AFTERNOON SESSION

The meeting was called to order by President Pearson, at 2 p. m., in the Assembly Chamber.

THE PRESIDENT: The subject before us for discussion is the program of this morning.

PROF. FRASER: Owing to the high price of potatoes, which is a common topic over the world, some of the German cities this year have established a custom which may be new, although it has been tried here. The city council is empowered to take any steps necessary for the preservation of public health, and this year these city councillors interpreted that to mean that the public must be cheaply fed. Accordingly, they went out in the open market and they have been buying potatoes and meat and a number of other provisions and selling those at cost. In that way they have reduced the prices in the retail and the wholesale stores.

THE PRESIDENT: Will Mr. Abbott inform the members if the action taken in New England against the milk shippers would tend to prevent farmers meeting together to discuss the value of milk?

MR. ABBOTT: I have no reason to think that it would go to that extent. Whether or not farmers may legally meet together and take action in connection with better prices for their product seems to be a question which as yet has not been solved. Mr. Ingling said that the buyer fixes the price of the farmer's product. In New England the farmer who attempts to fix the price of his product stands a chance of being sent to jail.

THE PRESIDENT: How are prices of milk received by the farmers in New England being determined to-day?

MR. ABBOTT: Since the indictments of milk dealers and milk producers through the secretary of their organization, milk dealers have refused to meet representatives of the Milk Producers' Company, as such, and it has been impossible to deal with them except as individuals. Representatives of the Milk Producers' Company have, however, undertaken to use what persuasion or force could be used in order to get them individually, not collectively, to consent to the prices which seemed fair and just to us. It has made concerted action much more difficult and made it much more difficult to secure anything like satisfactory prices.

MR. MORRELL: Mr. Ingling saw close to the point when he said the difficulty in organizing for cooperation is that the farmers have stood alone so long that they cannot stand together very well. We find that in our own community. We have a little agricultural association of twenty members and last year we did a business of about five thousand dollars, comparatively small for the first year. I found a great difficulty in standing with those men. I have been twenty years building up my business, and I confess I cannot see now that I will gain one thing by joining that association; I did, however, cooperate with them. I have been fifteen years building up a brand for my fruit. I have my own peculiar way of packing. I have my own mark and my own trade. I succeed in getting from a dollar to a dollar and a half more than the market price. It takes a lot of courage and faith to break away from those old considerations. We have made our own lime and sulphur at a very low figure. All those things are swept up at once and you put your faith in another man. We put up sometimes one hundred and seventy-five to two hundred barrels of fruit a day. It takes a lot of courage to put that fruit into a cooperative packing house, under another man with different ideas and conditions. But if we are going to succeed, every one of us has to have that courage.

MR. TUTTLE: One of the most useful functions of this system would be the getting together of representatives of the producers of foodstuffs from all over this state, and, from the cities of this state, representatives of organizations of consumers of foodstuffs, in a conference to be held perhaps here in the city of Albany, to discuss for a day or more the subject of the formation of cooperative organizations of producers and consumers, to the end that we may arrive at some practical action, as has been presented to us this morning by the paper read from the cooperative organization in Monmouth County, New Jersey. We all do a lot of talking, but if we don't look out we will not do much else. What we want to do, is to get a conference on the one single idea of cooperation of producers and consumers. There are innumerable organizations of women and philanthropists and people interested in the welfare of the people of the cities, and there are a great many granges and clubs and agricultural organizations scattered all over the state. I believe that we might get a delegation from those two classes of people that would number perhaps three or four hundred delegates, and discuss this matter for a day or two days if necessary and possibly formulate some plan of action.

MR. WHITE: We have heard a great deal about cooperation for the last twenty years. We are not much nearer cooperation now than we were then. You can count the successful cooperative institutions in New York State on your fingers and thumbs. I think we must call together a body of men who will take up the question on definite lines, not drop it for another year. For that reason I wish to introduce this resolution:

" WHEREAS, It is admitted that it is desirable that the producer and consumer be brought into closer touch and that proper methods be adopted to bring about such relation; be it

" *Resolved,* That the president of this society shall issue a call for a delegate meeting to be held in the near future, at such time and place as in his judgment seems best, for the purpose of working out a plan of action which is met with the approval of the organizations represented; that he shall invite the Grange, the fruit, vegetable and floral associations, cooperative associations and other societies interested as producers, and also consumers' clubs, labor unions and other interested organizations from the cities to send delegates to such convention."

THE PRESIDENT: The resolution is referred to the Committee on Resolutions.

The idea suggests itself to the chair that since four or five of the most prominent members of our society have just shown that they are in some doubt as to the advisability of these cooperative efforts, we might hear very briefly from some of them as to upon what their doubts are based.

MR. ALLIS: I think the time is ripe for cooperation, if we can get at it in any kind of way where the people will be bound by what they think is right. I will state my experience this fall.

We started a cooperative farmers' storage house in Medina. We had the stock nearly subscribed and were all ready to go on and put up a sixty-thousand-barrel cold storage plant. The cold storage men who had plants in that section made it their duty to go around and see all those farmers immediately. In about two days there was not a farmer in the lot who was ready to go on with the cooperative cold storage plant.

If you can get some plan that will hold the people together, that will be feasible, I am ready to try it, but until we get something definite I do not know what to do about it.

MR. HODGSON: May I answer that by reference to the paper read this morning about the plant started in Monmouth County. They crept before they walked. They had only seven thousand dollars to start with and inside of three years they had seventy-five thousand dollars. They took the men who were willing to go into this scheme; they did not force people into it.

MR. ALLIS: There was no force used in this cold storage proposition. We had the money all subscribed and were ready to go on with it until the cold storage men who were there scared out the farmers who were going to put up the storage plant.

MR. WILSON: I have had a little connection with cooperative work and I felt a good deal as Mr. Morrell and Mr. Allis and Mr. Porter did. I have been discouraged with it. It all came about through not having the right kind of management. One of the difficult things is to select the man whom we can trust, who is well qualified on all sides to handle this proposition for us. I have been thinking since being here at this meeting that probably we might solve this question after the sixteenth of February, if our Commissioner will go down to New York and open up a mail order business. We will flood him with goods of all kinds.

MR. ALLIS: I will go into any proposition the Commissioner is in.

MR. WILSON: That is just it, Mr. Allis. We want a man we all have confidence in and then we will all go in.

MR. MORRELL: While I said I was in favor of cooperation, it would appear that I voted against it. I am not opposed to it, but, with one exception, they have always been failures at home. We had a cooperative scheme that was a magnificent failure. We had a cooperative cannery that went the same way. The only reason we have succeeded is that we have had twenty earnest men who have acted as one man. We get together, have our meeting in the orchard to see what each is doing; we have our business meetings and social meetings and act all in one direction. The reason we have succeeded is that we have two or three men who are large growers and dealers and they go right in with the others, large and small together. I really believe that the time will come when that little association will be a factor in Columbia County; no question about it. But we must go slow and go sure; we must feel our way.

MR. GILLETT: I voted against this proposition for this reason: I have been connected with the State Fruit Growers' Association for several years. One of our basic principles in that organization is cooperation. We feel the need of cooperation in selling our products. The matter has been before us in a number of forms for several years, and I personally, and I believe other members of the organization, have come to the conclusion that it is too big a proposition for the New York State Fruit Growers' Association to handle.

Personally, I believe that if this scheme of cooperation is ever worked out successfully it will be done in a small way by numerous small organizations. I do not believe it can ever be worked out on a large and statewide scale. I believe that small organizations similar to the one Mr. Morrell has spoken of, or a little larger than that, perhaps, must get together and pool their interests. I am firmly convinced that a large organization, handling the whole proposition, can never succeed. There may possibly, after these small organizations have been formed, be a central organization to which these others may be contributory.

As secretary of the New York State Fruit Growers' Association, I have studied this thing for a number of years, and I am convinced that my position is right, that, if it is ever worked out sensibly, it must be done locally, by local communities in a small way. Then, if they can combine their interests and have a central selling organization, after the small organizations are formed, that may work; and they may then get in touch with the consumers' end.

MR. EVANS: In all the remarks made to-day, both in the morning session and this afternoon, I have not heard anything said in consideration of the consumer, except the report of Mr. Tuttle. It is essential that if anything is to take place to advantage, the consumer should be taken into consideration. He is the largest end of the proposition. Mr. Tuttle this morning laid before you the existing circumstances in New York in regard to the distributing of produce and supplies. He understated the matter. There is no market in the city of New York, except the Washington Market, that supplies to the consumer anything which he can take home to his own table. In my boyhood the Washington Market was the great center; it supplied all of the West Side of New York, as the Fulton Market did the East Side. Fulton Market is already condemned, for the reason that the population has moved northward in the city, and nobody is to be supplied by it. Washington Market is fast going the same way. The result of all this is that the middleman is getting all of it. What I take from the different projects here is the elimination of the middleman. It seems that nothing but that factor will help the consumer.

An illustration took place in the city of Brooklyn this fall, just before Thanksgiving. A woman who had under her supervision the supplying of a large amount of goods for an important charitable institution, went to the Wallabout Market to buy her supplies. She was refused goods by everybody on the market. She went to Washington Market, where she could buy all she wanted. She had to pay expressage from there; but, after doing so, she saved a very tidy amount. In the city of Brooklyn there is no place where the consumer can purchase any supplies, except from the retail butcher or grocer. We are tied hand and foot.

Now, coming to the question of cooperation, I have a little concrete illustration right in my own family to show how easy it is for the consumer to get into communication with the producer, if he sees fit to do so. Perhaps three months ago a friend of mine said, "Would you not like to join with us to purchase some supplies from a farmer in New Jersey?" I went into the scheme, and, instead of paying fifty-five cents a dozen for eggs, the prevailing price in Brooklyn, I get them for thirty-eight; instead of paying fifty cents for ordinary butter, we get the very best for forty. Those are examples of what can be done by individuals, who have no money in it, but who simply wish to provide themselves with supplies at a reasonable price, and wish to get better prices than from middlemen. I asked the agent how they were coming out, and he said they made ten to fifteen cents more net, after paying all expenses, than they formerly did from the middlemen.

THE PRESIDENT: The holding of these meetings in these beautiful and commodious quarters has not been entirely at the convenience of those who ordinarily use these rooms. I suppose the one who has suffered the most inconvenience is the Speaker of the Assembly. He has very kindly given up the use of this chamber for the agriculturists, both yesterday and to-day. He is naturally interested in the purposes of our society, for he represents in the legislature, and has now for a long period of years, the greatest dairy county in our state, on a basis of size, indeed, the greatest dairy county of the whole United States — St. Lawrence.

But, more than giving up his rooms for our use, he has generously consented to act this afternoon as our presiding officer. It gives me very great pleasure indeed to announce that Speaker Merritt will occupy the chair.

SPEAKER MERRITT: I have been very glad to extend to the representatives of the agricultural interests here all the courtesies possible. As Commissioner Pearson has said, I have been necessarily interested in the things that interest you, for a great many years. I have served on the various legislative committees, to which bills emanating from bodies such as you represent would naturally be referred, and I concede all that the Commissioner has said in regard to the greatness of the county which I, in part, represent.

You have had pretty extended sessions, and I have followed, as one can in the newspapers, the substance of what has been said here. You have had distinguished and interesting speakers. I shall not undertake to make any speech in the way of discussing any of the topics which have been here under consideration, nor any of the speeches which have been made.

There is only one thought that has occurred to me. I have had it in my mind for a good while, and I daresay many of you have, too, more particularly within the last year or two. That is, that with all that is attempted by the various associations and by the legislature, in broadening agricultural education, establishing secondary schools, as we have already done, and building them up as rapidly as the funds of the state will permit, we do not seem to have taken any steps to increase the supply of labor in the state; at least, if it has been done it has been done without any legislative assistance, and it has never been a matter of discussion here. The Northwest has had a great influx of emigrants for a good many years, of the very best kinds: Swedes, Norwegians, Danes, Northern European blood, making good citizens, being very much addicted to the practice, which is somewhat un-American, I am afraid, of raising large families, providing, directly and indirectly, a supply of the best kind of labor. It has not been due to accident that they went there; it has been the result of a well-worked-out and deliberate policy which might as well have been applied to this state, to my county, to your county, as to Wisconsin or to any of those other states. I know that labor is very scarce in this state. I presume every farmer feels it perhaps at certain times more than people in manufacturing businesses. This thing should be deliberately taken up and worked out. Something was done, I think, under Commissioner Pearson. Perhaps I spoke erroneously in the beginning when I said that nothing had been done, but nothing has been done that resulted in bringing in people. They come to the port of New York and go on their way into the Northwest, as they have been doing.

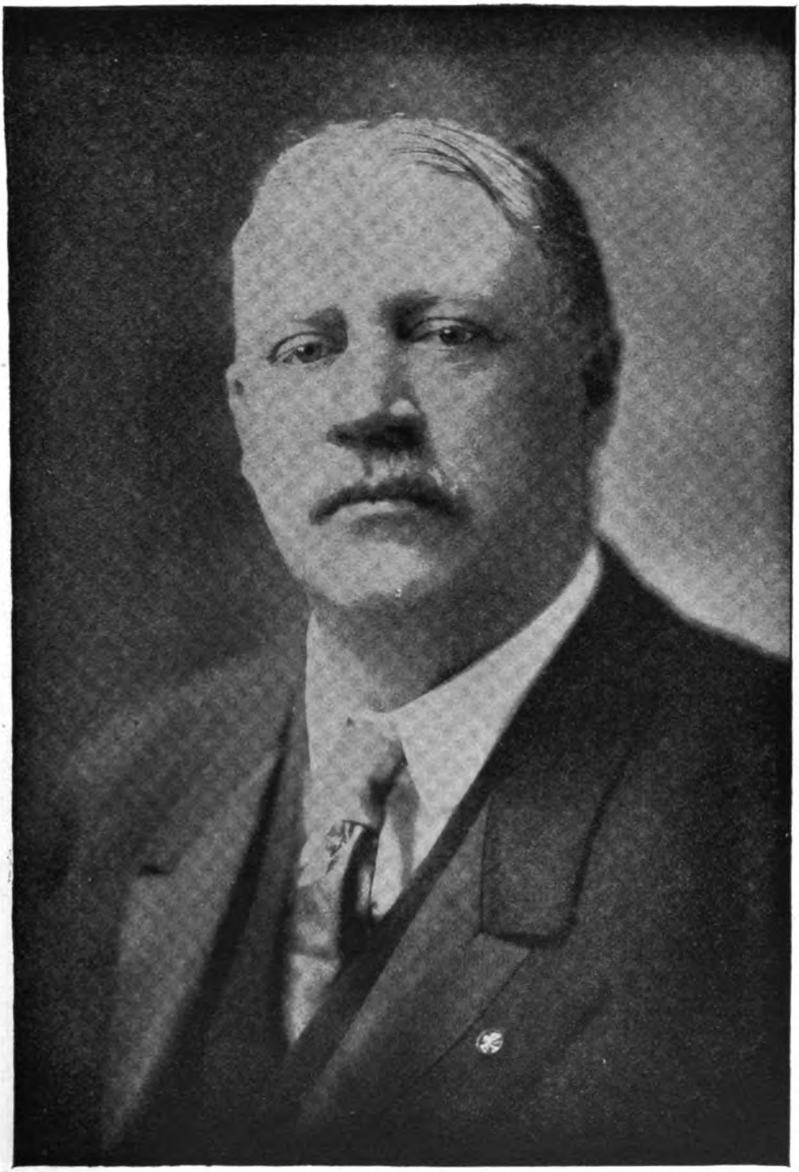

FIG. 47.—EDWIN A. MERRITT, JR., SPEAKER OF THE ASSEMBLY.

I have had curiosity enough to make some inquiries about it, which satisfied me that it was in no sense an accident, but was the result of organization of the owners in the Western lands, the Western states, and the Western railroads, to build up their country and community with the right kind of people to cultivate the soil, to furnish labor for all the various interests and industries, and to give a population, finally, whose character would be of the very highest kind. I have no suggestion to make as to how this should be done, and it may be that I go too far in suggesting it. I may be in error in assuming that it is a matter of great importance, but that is one thing, it seems to me, that should be suggested by somebody and, if I do not overrate it or overestimate its importance, I would suggest that it is a good thing to work out and provide for, either by the initiative of such bodies as you gentlemen represent, or through the state.

The first thing I find upon your program is an address by F. C. Minkler, professor of animal husbandry, New Jersey State Agricultural Experiment Station, New Brunswick, New Jersey.

LIVE STOCK AT FAIRS

F. C. MINKLER

If I were addressing a New Jersey audience it is possible that I might feel more at home. However, the subject that has been given me this afternoon is "Live Stock at Our County Fairs," and it is my intention to merely open the question for discussion.

What is the purpose of a live stock or agricultural fair? Is it merely to entertain the visitors or to educate the public? Is it to unify the type among the breeders of live stock; or what? A good many fairs resort to the sensational rather than the educational. I believe this is unfortunate, and it is the case in too many of our live stock shows. Some people might think by attending a county fair that its object was to display freaks and monsters. This certainly is a disgusting feature. On the other hand, if the show creates dishonest competition, it is unfortunate. However, if it is the object of an agricultural fair, or a live stock show, to solicit honest comparison of the animals by classes or breeds, the cause is a worthy one and the shows should be supported and patronized. Another function that an agricultural fair should perform is to encourage the breeding of pure-bred live stock of useful and marketable type. We must remember that it is the local live stock breeder that our agricultural fairs should aim to encourage and please and look to for patronage. County fair gatherings enable the seller and buyer to reduce or add to his breeding herd. They afford a very convenient opportunity for comparing representative specimens and should stimulate and crystalize friendly neighborhood competition. Live stock shows also are guiding factors toward establishing a reputation for a fixed locality as a live stock producing section, and this brings in the advertising feature of live stock exhibits.

However, what do we find? One condition that you will find in attending the average county or town fair is that relatively few, if not the same, exhibitors appear year after year, largely because the average farmer does not want to compete with the "circuit rider." In the second place, we usually find dilapidated quarters, often isolated and unsanitary, and it is a disgrace to house valuable animals under their leaky roofs, let alone the dangers from exposure and accidents that cannot be avoided under existing circumstances. We also encounter antiquated classifications and confusing prize lists. If you will compare the prize lists of the many county fairs in New York State, it is probable you will not find two alike. This is confusing and unbusinesslike. There is little or no identification of either the breeds or the individual animals. It is not uncommon for the city visitor to identify a "Berkshire cow," or a "Holstein pig." The visitor is not to blame; he comes to the fair to learn and should be given every opportunity. I say there is little or no identification of the owner, the breeds or the individual animals. Publicity is necessary; it is too often absent entirely. We also find half-hearted competition. A breeder of live stock does not go into the showing of his animals with enthusiasm. He has an inkling that he knows in advance how the ribbons are to be placed, and believes it mere formality bringing his animals out, watching the other fellow take the ribbon, taking the animal back and explaining to his neighbors why the other man won.

Then we have, by far, too many culls that disgrace the show ring. Instead of being specimens or types of animals worthy of recognition, they are mere freaks of breeding. Likewise, we have farmers that are awarded ribbons whose animals do not deserve recognition or merit the prizes. I think this is one of the most unfortunate circumstances that exist at our fairs. The fact that the judge at a county fair thinks he must award a ribbon to an animal whether it is good or bad, whether there is competition or no competition, is unfortunate. The owner goes home and shows this mongrel prize winner, and lauds its qualities, saying, "I won first premium at a certain fair on this animal," and probably sells his mongrel at a long price on the strength of such awards. It is a disgrace to award a prize to any animal that is not worthy of recognition.

We have had, at a good many of our fairs, incompetent and dishonest judges, who have passed upon the owner rather than on his live stock. I remember going to a fair at one time and judging every class, from the best horse to the prettiest baby. This practice is ridiculous, yet we find at a good many of our county fairs one judge, selected from the neighborhood because he is well acquainted, and he is asked to pass judgment on the Holsteins, Jerseys, Berkshires, and every other class of live stock in the show. Then, if he gets through a little early, he is asked to judge in the agricultural products department. Just what system we should adopt in the matter of naming judges I cannot outline definitely, but I do believe in the one-judge system. If we have a three-judge system it is a mere matter, if there is a difference of opinion, of accepting the judgment of the one man who has the most influence. If we can select for our judges at our fairs, men, in the first place, who are honest, in the second place, who know, then one judge is all we need. I believe that the progressive agricultural fairs and progressive live stock shows will eliminate, in time, the three-judge, or five-judge system, as there is more or less wrangling and waiting, and, after all, it is a one-man judgment.

Again, we have insufficient publicity and too little variety of procedure. If the average farmer takes his live stock to the show, he wants his neighbors to know about it. If he wins, he wants his neighbors to know about it, and the average county paper, or the average information bureau, will devote a whole page or column giving details of a horse race; while the winnings in the breeding classes are grouped, condensed and relegated to mere fillers. I say we give them insufficient publicity.

Another condition that we find—and I believe it is a vital mistake—is the annual change in management. Let one man, if he understands the workings of the agricultural associations, learn the business. He has his own ideas about the prize lists; he has his own ideas about particular phases of the live stock classification, or any other question that is up for consideration, and instead of having regular progress, the chances are that you will stay right along on the same level. If you can select a man who shows results, then you should keep him in that office as long as he makes good.

That naturally brings us down to the question: If this is the condition of our county fairs, what can we do toward improving our shows? In the first place, we should modernize and unify the prize list, with first thought directed to the local breeders, rather than to the "circuit riders." I mean by a "circuit rider" one of a group of professional showmen who divide prize money at the first fair, then mutually plan a circuit whereby each will be able to scoop the prize money without competition. Possibly we should recognize fewer breeds; probably we should bar professional showmen from taking part in the prize money if they are not residents of the particular county in which the fair is held. I know what I would do; yet, it would not perhaps be safe to recommend drastic measures for all conditions.

In the second place, we should make the judging of the animals of educational value by explaining why the award is made, and where one animal is superior or more desirable from a utility standpoint than another. Too many times the ribbons are tied in the stall and the animals are not even led out into the show ring. If an animal is worth bringing to the show, the owner should be given an opportunity to display the individual in the open show ring. The judge should pass intelligently on the animals and tell why one animal is placed above another. I do not believe in public criticism of the exhibitor's live stock, but if a competent man tells why he places animal number one over animal number two it is an educational feature, and the owner of the live stock should look upon it in this way, because it is to his interest to know the points of excellence. Again, we should interest the boys by inaugurating competitive judging contests and rewarding efficient talent appropriately. I was down in

Virginia, at the Richmond State Fair, this year. They have organized county corn clubs for the boys and established local shows, while the State Fair is the final battleground for the prizes. To see each county represented by a proper exhibit, and to examine this still further and find out that the boys in the separate counties were largely responsible not only for the selection of the products exhibited but for the growing of those products as well, was a sight worth while. It was a wonderfully educational feature. Furthermore, we can organize local breeders' associations and solicit competition among sections grouped as well as from the individual breeders. The argument is often brought out that the farmer does not have a sufficient number of animals to fill the class. If we could group certain neighborhoods together and let them bring selected animals and fill these classes it seems to me it would be a step in advance.

We should arrange for and furnish suitable placards that will immediately identify the breed and the breeder, as well as the animal, and intelligently inform the public spectator. We can do this by erecting a bulletin board at the ringside and posting the winnings. We should guard more carefully against contagious diseases through disinfection and effective sanitation. The best breeders stay at home because they are afraid of diseases, and the average fair superintendent does not look carefully enough after the thorough fumigating and cleaning of the stables after the show, or previous to a particular exhibit. We should provide more and better accommodations for the exhibitor, as well as his charges and make it worth while to win. Give the prizes to owners of worthy and useful specimens and do not let the mongrel beasts on the ground. Name a sifting committee or have a judge whose business it is to bar from the grounds mere mongrel beasts.

I venture the suggestion that we could gain by eliminating entrance fees. Ten per cent. of the first premium does not mean much to the association but the farmer exhibitor dislikes this deduction. Eliminate entrance fees and offer substantial prize money or its equivalent. Arrange for a work horse parade. Organizations of this order are doing wonderful things for the breeding of draft horses in the West. Popularize colt shows by offering neighborhood trophies for groups of youngsters, the get of a prepotent sire or sires. Formulate judging demonstrations and enable owners of live stock to bring in their specimens for comparison, commendation or criticism. In the state of Utah they have followed this plan and secured wonderful results. Farmers are invited to bring in either their draft horses or dairy cows, and competent judges compare or criticize any points that may suggest themselves or deserve comment.

Through the business men's league or commercial club arrange for a two-days' short course in live stock feeding, breeding and general management. This refers particularly to the town shows. Many of the business men's organizations that are found in the different cities of New York State would gladly contribute prizes to be awarded or contribute money such as will make possible a week's short course in that particular city.

Further than this, we should organize boys' clubs with local shows in season, that will localize interest, stimulate activity, foster friendly competition, demonstrate principles and combine efforts directed toward permanent improvement in the growing of live stock and their products. It has been said that it is a hard matter to interest the old men in modern methods of live stock breeding or progressive agriculture. Professor Christy, of Indiana, states that when he first went into Indiana to form boys' clubs, if he tried to get a picture he could not get the old man in it at all. But after the boy had won success in corn growing, after it had been demonstrated that the principles were true, every picture that was taken later had the old man in it. We can do wonders by working along the lines suggested and interesting and educating the young men who must be depended upon to develop practical farming methods during the years to come.

We must practice, and prove that "almost right" is wrong. This refers particularly to the classification and judging of live stock and the treatment that we accord the exhibitor of live stock. If we study the methods of foreign countries, if we go to any of the centers that are notable as live stock centers, we will find that interest and enthusiasm are due largely to the little live stock show in a particular neighborhood, where the farmers assemble regularly in a friendly manner to compete for prizes offered for useful and marketable live stock or their products.

MR. SISSON: I think a good many of us will feel moved to commend very heartily the scholarly, thoughtful and very suggestive paper that Professor Minkler has given to us. I expect there are here to-day the representatives of ninety county and town fairs scattered over the state of New York, and we know we have with us representatives of the State Fair. There are ninety-one educational centers. If viewed in the right light, just think of the force that these ninety-one fairs can have in lifting the animal husbandry of this state and its general agriculture into the place it ought to occupy. Viewed in that light, we can see the warrant the state has in appropriating a quarter of a million dollars to pay the premiums at these ninety county and town fairs. It is distinctly the function of these associations and societies to see that their business is so conducted, that their prize lists are so arranged, that their judging is so managed and done, that the result of their work will warrant the state in continuing this policy.

We have had, this afternoon, some very sharp criticism of evils to which some fairs in my own county may plead guilty, and I think St. Lawrence County is no exception among the counties of the state. Our judging has been done in altogether too hurried and slipshod a manner. It has descended, in many instances, to the mere passing out of the premium money and the more quickly it is over, the better satisfied the managers have seemed. The matter of educational features has been hurried over to get time, perhaps, to go over to the grandstand to see the horse races, or at least to do something else that was thought more important.

There are just two factors that will help correct these things. The great body of breeders throughout the state, actuated by high motives, are ready to cooperate with the town and county fairs, re-arrange their classification, and go over their premium lists. They desire to secure uniformity, so that we may get out better exhibits, and make them more uniform throughout the state. The second agency is the fair management itself. I know you all want to do what is best, but the breeders of the state really need your assistance. The county and town fairs afford one of the best opportunities for the live stock breeders of the state to bring the results of their work before the public. It is gratifying to a breeder to bring out his stock and have judgment passed upon it. If that can be done by a competent man, we can have shown to us the reasons for his awards, and it will send us back to our farms again with a good heart to go on with the work and improve and perhaps correct our defects.

Again, I wish to commend this paper and to ask the managers of fairs here to take it in the right spirit and to give more time to the purely agricultural and educational features of their shows. Anything that the New York State Agricultural Society or the Breeders' Association can do to assist you will be done.

SPEAKER MERRITT: I now call upon the Honorable A. P. Sandles, Secretary of the Ohio State Board of Agriculture and Secretary of the Ohio State Fair, Columbus, Ohio.

IMPROVEMENT OF COUNTY AND TOWN FAIRS

A. P. SANDLES

If you educate a boy you educate a man, but if you educate a girl you educate a whole family. Thinking that, I want to recommend to you the woman's program for this evening. In Ohio last week we had a series of meetings something like these, but we neglected the women, and did not provide any place or opportunity whereby they might distinguish themselves, as Commissioner Pearson has done here.

I want to suggest, however, some of the information I obtained from New York women in answer to my list of questions which I sent to them, and of which I spoke this morning. Among other things, I asked them if they wanted to vote on equal terms with men. One woman in five in New York says she is willing to vote. One said that she did not want to, that that was what she married a man for. Another said, "Whenever my husband does not have sense enough to vote, then I want to vote."

I asked this question: "Are husbands as helpful in the home management as they ought to be?" Almost unanimously, the women said, "No." It is time for some of you good husbands to reform and revise your constitution and by-laws. I also asked this question: "Are housewives as careful about decorating and beautifying the home as they ought to be?" Nine out of ten said, "No." They are willing to make their own confessions as well as to jolt their husbands. These things enter into the home and farm life, and help to make life worth living.

My subject this afternoon, as I understand it, is the "Improvement of County and Town Fairs."

I have great faith in any kind of a fair, and in any institution that tends to higher ideals. I have great faith in a meeting or event that tends to bring out the best there is in man or beast. I believe that such is the true mission of county and state fairs. I have had experience with seventeen county fairs and ten state fairs, and I have tried, in my humble way, to make them worth while. Ohio owes much of its prestige, and whatever distinction it may have won among its sister states, to its many county fairs. I know that the right kind of a fair will drive back the darkness and beckon us into the light of better things. Competition and prizes are the best spurs to bring out and develop the highest excellence. County fairs should be business institutions.

You have just listened to a most excellent address. Some of the evils, drawbacks and ills of fairs were mentioned. In the state of New York your county and town fairs, totaling ninety in number, cost many thousand dollars. They distribute thousands of dollars in prizes and in paying expenses. It is right and proper that the very best business management should be given to them. Good results should be obtained from every fair. If a county, town or state fair is an agency for the betterment of society, it deserves consideration at the hands of everybody. The fair next year must have new features, and educational items, that it did not have this year.

I like to think of a county or state fair as being a guideboard, an index, to good farmers, to good articles, so that the public may have something to guide itself by if it wants to purchase. The greatest value of a fair is to hand out a prize at the right place, so that the excellence of the article or the animal is made known to the public, and by the excellence of that animal or article other animals and articles can be compared. Many of our exhibitors capitalize and make a valuable asset out of the fact that they won a certain prize at the New York State Fair or at one of your county fairs; they advertise it; they add a value to their herd, to their animals, or to their machinery and other products by reason of having obtained this prize. That being true, it is more important than ever that the right kind of judges be selected and honestly use their judgment in awarding prizes.

Thomas Jefferson said that the best committee ever appointed consisted of three men, two of whom were dead. I, therefore, think that the speaker before me was right in asking for a one-judge system. A judge should play no favorites; but should award the prize on the merits of the animal, and not on the bank account or social standing of the owner.

The right kind of a fair improves the race of human beings. Show me an animal that will score ninety points, and I can show you its owner, who will score one hundred points. A first-class animal is seldom owned by a second-class man.

It is a commercial proposition to improve the breed. In Ohio two cows were cared for, one the same as the other. The one was the average scrub cow; the other was a good cow, not a fancy breed, but attention had been given to her breeding. It cost the same to keep one as the other. Their record at the end of the year showed that the scrub cow had made a profit of five dollars; the other cow had made a profit of fifty-two dollars; a difference of forty-seven dollars between the scrub and the cow that could go out and win a premium at a county fair. That is business. That is dollars and sense, and I mean " common sense " there, not " copper cents."

The county fair shows the results of good seed and good cultivation. It shows the result of mixing brain and science along with dirt and sweat. Sixteen Ohio men went into a corn-growing test. Each selected what, in his judgment, was the best seed, and each planted his acre in the same field where the soil was the same. The seed bed was prepared in the same way, and was planted the same day and the cultivation was the same. Those farmers were more careful in selecting that seed corn than they would have been if not in that test.

I want to digress for just a minute. I sent two thousand question blanks to Ohio farmers, and I asked this question: " How many farmers in your township know exactly what kind of corn they plant, and can name the variety ? " This is a confession from Ohio. Over two hundred answered, " Not one." Many said, " One in ten; two in ten; three in ten." Is that true in New

York? It is worth while for you to know as much about your business as you can.

This little corn-growing test I am telling about demonstrated that fact. These sixteen men were much interested in the test; they had not always been in favor of agricultural colleges and experiment stations; some of them had said, "Book farming does not amount to anything." They thought that science was all a fad. On the day the corn was husked and measured I was invited to visit them. They had a program, and a good chicken dinner. It was a happy, social time on the farm. The results of the test of that seed corn, planted in the same kind of soil, cultivated in the same way, each plot having had God's sunshine and God's rain upon it, one the same as the other, were surprising. The highest average was a fraction over eighty bushels per acre, and the lowest, fifty-three, a difference of twenty-seven bushels. It pays to know. It pays to find out what kind of soil you have and what kind of seed you ought to plant.

It is the old county fair that shows to one farmer what other farmers can do, and it is the best place on God's earth to take the conceit out of the man who "knows it all." I believe in field tests. Our fairs will improve, from an educational standpoint, when the results of those field tests are brought in where everybody can see.

In Ohio the grangers are interested. On my own county fair grounds the finest building is Grange Hall. It was dedicated by the state master and the state officers. We offer prizes for the best grange exhibits. Competition between those grangers is something marvelous. It helps to make fairs better in the Buckeye State.

We have school exhibits at Ohio fairs. For years we went on giving prizes for animals, for race horses, for agricultural products, but nothing to that best of all crops, the boys and the girls. Then we woke up to the fact that we ought to give prizes on brains as well as bulls. All the schools of my county prepared exhibits for the fair, and Educational Hall is one of the best buildings on our grounds. The interest taken in the schools is marvelous. Some of the indifferent, "don't-care" teachers did not favor this feature of the fair. They wanted to ring the bell and draw the salary, not caring whether good results were obtained; but, when the parents of their districts came to the county fair and saw the display of the next district, it smoked them out. The prizes in that department are books, and we have distributed more than twenty thousand books among the boys and girls of our county. It not only did the schools good, but it did the fair good. Our gate admissions have more than doubled since we established that feature. We were able to interest a lot of old people who before had been indifferent. You know that if you take the old cow and her calf and put one on one side of the fence in the evening and one on the other, in the morning the chances are they will both be on the same side of the fence, and always on the calf's side. If you get the young folks interested, you can get the old folks to pay gate admissions to your fairs. It has given a tone and culture to our fairs in Ohio. We have Children's Day, when the schools close, and fix up wagons, and come in with songs, and flags flying. There is no doubt about patriotism in those young folks.

I want to remind you of the importance of our schools. Humboldt says, "Schools, books and education are the scaffolding by means of which God builds up a human soul." That is true. Do farmers in New York State take as good care of schoolhouses as they ought? Do they appreciate the teacher? In those questions I sent out I asked whether flowers or weeds were growing around the country schoolhouse. Many owned up that there were weeds instead of flowers. I asked this question: "Do you ever stop and shake hands with your schoolteacher, and give her a word of encouragement and good cheer?" Three out of four said, "No." I asked this question: "When did you last visit your school?" The great majority said, "Ten or twenty years ago," or, "I don't know?" I want to bring some of those things home to you. The county fair is a good place to help our schools and to cultivate public spirit. You ought to be charitable toward that schoolteacher when your boy comes home with his tale of woe about what happened when he "didn't do anything." Because of increased gate receipts, after adopting the school feature, we were able to give better purses to our race horses.

State exhibits from our college of agriculture and experiment stations come out to our county and town fairs. It brings people into closer touch with those institutions than could be done in any other way. In Ohio we bring, through the county fair, the experiment station and the agricultural college to the farmer. They make the most interesting and attractive exhibits that we have.

Old Soldiers' Day is another feature we have in many of our fairs. It is the same day as Children's Day. The schools and old soldiers come in free. It is a compliment we pay to the old battle-scarred veterans. The men who saved this country, when it had to be saved, deserve some courtesies. It is good for children to come out and see the remnant of that "Grand Army of the Republic;" it gives a tinge of patriotic sentiment we did not have before. I hope you will extend such courtesy to the boys who wear the little bronze button in the lapel of their coats.

We have a "Booster" car going over Ohio. In that we try to show to all who come reasons why they should stay in Ohio, invest their money in Ohio, and the possibilities of Ohio. Recently a trainload of Western governors came through these states—your own state.was one—and they unloaded carloads of arguments why our farmers should go out West and buy land. The Western and Southern states have long been promoting their interests in this way. Why do not New York and Pennsylvania and Ohio advertise their possibilities and resources? The "Booster" car and our "Booster" meetings find a hearty response in everybody. To boost your own town and your own county is a pretty good religion. It pays. Our "Booster" car is stopping half a day or a day at a time. The railroads do it free of charge. The schoolboys are asked to write about the possibilities of their own town and their own county. The business men are offering prizes, sometimes four or five hundred dollars, for boys and girls to come in to these little town meetings or affairs, for picking out the best seed corn, or for baking the best bread. You can see the possibilities of it.

We believe the rainbow comes down in Ohio and there is a "pot of gold" in every acre there, if you just dig for it. Many of our men have been induced to go far away. They were the strong men, with some hard cash, but when they got away out yonder they found out their mistake; they found that by giving the same effort to overcoming difficulties and solving the same problems they have to away out there, if they had done the same things back home, they would have had better results and a better reward for their labor. Your business men in every town and city in New York can afford to promote town fairs and those "Booster" meetings.

I asked many women in New York how many received catalogs from the big mail-order houses. Nine out of ten do. Business men should help these "Booster" meetings and these town fairs, and promote the idea of staying at home and buying at home. Try it, and you will find a wave of patriotism sweeping over New York State and a wave of pride in the old Empire Commonwealth that you never had before. The town fair can accomplish a great mission: The good things, the good men and good women are not far away. The men and the women with whom you shake hands have as much pure gold of worth and merit in them as those you would find if you traveled a thousand miles. The Empire State has as many blessings for you and your farmers as Canada or the Golden West. Will you appreciate and take advantage of them? The "Booster" enterprise will surprise you, as to the sentiments it will bring out.

The fair is a great institution. Here it is, boiled down: The fair is the battle of the breeds; it is the season's finished story; the home of the top-notcher; the upstairs of human endeavor; the showcase of brain and brawn; the repository of finished products; the arena where Greek meets Greek; the acme of the newest and the best; the crossroads of well-directed effort; the home stretch of genius and invention; the convincing argument for higher ideals; the high priest of civilization and Christian living; the field upon which the victories of peace are won; the college and university of experience and experiment; the guideboard pointing to better methods and better things; the place to learn the joys of victory and the gloom of defeat; the inner chamber of the Temple of Ambition and Perseverance; the pendulum which moves the hands of the clock of progress.

I want to read from President William McKinley, by the way an Ohio boy, and I might here and now return thanks to you folks. You know, Ohio furnishes presidents, but New York elects them, and we are very grateful to you for it. I give you an invitation to keep on doing it. President McKinley made his last speech in your state, on the grounds of the Buffalo Exposition. In that speech he said this: "Fairs and expositions are the timepieces which mark the progress of nations, and every fair, great or small, has helped in some onward progress." I believe that the words of William McKinley are true. I believe that the fair ought to be a respectable institution. Eliminate the gambling features, the "hoochee-koochee," and those features that would make the mothers and daughters and the wives blush in shame. We can raise the standards of the fair, and we ought to do it.

In Ohio we are going to rid ourselves of the curse of the free-pass business. I do not know what you think about it, but for years we went on handling out passes to our favorites and our pets. We woke up to the fact that the public would have more respect for us if we gave everybody a "square deal." We now have the little counting machine into which you drop your silver ticket, a half-dollar piece. Last year when the governor of our state walked up, he found that his money would fit, and it had to fit before he could get inside the gates. I attended the State Fair at Indianapolis, and when Governor Marshall and Vice-President Fairbanks walked up they said they never were prouder in their lives than when they put their little half-dollar piece in, just like every other man. There ought to be some places, anyhow, where you could kind of "level up," and where the man who always has paid can feel he is just as good as a governor or an ex-vice-president. The agricultural press throughout this country is standing solidly behind us. I sent a letter to every leading agricultural paper in the United States, asking their views in the free-pass matter. Practically every one of them came back, without hesitation or equivocation, and said, "You are right; stay by it." The fellow who always has paid is not kicking about eliminating free passes.

The social features of the county fair are worth a whole lot. It is a place where we shake hands with each other. I want to congratulate you on the way you shake hands. I have had hold of several of you, and I am suspicious, from the vigorous way you shake hands, that you may be running for office. I like the fellow who takes hold as though he meant it. I like the fellow who shakes hands and makes you feel that you are just as good as he is. When you find a fellow like that, you know he is not "stuck up," and you love him. Once in a while you hear it said that this or that man is all right, after you "get acquainted" with him, after he "thaws out." I like the fellow who never freezes up.

Centuries ago the fair was held in high favor, and will continue to be, so long as old friends love to meet and greet and tell each other the joys and woes of a passing year. The mystic, invisible chord of friendship, which runs from one heart to a thousand others, is the secret power which draws the young and old, the rich and poor, together in one grand reunion under the shade of the spreading trees, which grow upon the grounds of " The Old County Fair." When you clasp again the hands of those you knew, when you were boys and girls and sweethearts together, it will drive dull care away, and the songs of the birds will be sweeter, the burdens of life will be lighter, the ties of true friendship will be stronger, the cream on the milk will be thicker, and the roses and lilies more fair.

It is the place where youth and maid exterminate roasted peanuts and red lemonade, and joyously wander, hand in hand, through the gardens and fields of the future, knowing little, caring less, of the world and its woes. The plains to be crossed, the mountains to be climbed, the seas to be sailed, and the harvests to be gathered, give them no concern. It's a clear sky and is yet only life's morning.

It is the time and place for father and mother to rest and refresh; time to pause in life's struggle and forget all about gold; time to stop for a day the plow that is turning the furrows of time. " The heart of the toiler has throbbings that stir not the bosom of kings," if you stop, now and then, for a day to mingle and mix with your fellows. Perhaps it was there that grandfather first met and smiled at grandmother. You know the rest. There is a tide in the affairs of men, which taken at the flood, leads on to marriage, a happy home and prattling children. A hearthstone, a rocking cradle, a mother's lullaby song and a father's strong right arm keep the world moving on. There is no place outside of God's green earth where two hearts are more sure to beat as one, than at the county fair in October, every year.

No, old man, it isn't your turn to kick. The youngsters are going to the fair, and so are you. Don't you remember the day when God made the sunshine the brightest, a quiet place, a pair of trusting eyes, a hand in yours, and two heads close together? This great big, round world had only two people in it then. You were one and she the other. And the words she said were the words you wanted to hear, and the promise was made. The whole thing started about fair time, didn't it? Had a good fair, that day, long time ago. No doubt the sun doesn't shine now as it did then; perhaps that quiet place would be hard to find; perhaps those eyes have closed in eternal sleep; that hand may have vanished and be cold; that voice may be stilled in death; but the memory of that day and that place, and that old sweetheart is planted in your heart forever. And were the whole world yours, you would give it all, old man, to go right back there now. Well, your children and, maybe, your grandchildren, are looking for that selfsame place and day. It's about fair time. The frost will soon be on the pumpkin and the fodder in the shock; and human nature's just the same as 'twas some fifty years ago.

May the golden sunlight of God's favor shine upon you from a cloudless sky; may your barque of life drift gently down the river of time into the great ocean of eternity; may your corn and cattle be your only care, and your supreme delight the county fair.

SPEAKER MERRITT: Our next speaker will be J. P. E. Clark, manager of the Binghamton Industrial Exposition, Binghamton.

CONDITIONS AND THEORIES

J. P. E. CLARK

I came here, upon the invitation of Commissioner Pearson, to speak for five or ten minutes upon the subject, "Improvement of Town and County Fairs," but I am very much gratified that I have the wide latitude offered by the topic, "Conditions and Theories," rather than the subject I supposed was allotted to me, for the reason that the former topic has been so very ably and eloquently treated by my predecessor. My remarks will be along intensely practical rather than theoretical lines.

Those who have participated in the management of town and county fairs know full well the troubles and difficulties we have in making the fairs of New York State profitable, or even the ends meet. I know of no fair, operated either by a town or county society in the state of New York, that could exist if it were not for the state apportionment. Therefore, they must be conducted along economic and business lines.

I am very glad to be in a position to state that the tendency of fair operation in the state of New York is upward. I believe that the ninety-one fair societies of the great Empire State are striving their utmost to conform to all reasonable requirements laid down by the Department of Agriculture, and to make themselves worthy of state aid. It is the desire throughout the state to elevate the tone of fairs, accord the exhibitors proper protection and make the educational features paramount. I think they fully realize that the state of New York, through the Department of Agriculture, has the right to expect that, if we accept from the state money for our support, we should meet all just requirements. It has been advocated by those high in agriculture that the ideal fair would be the one which simply took the state apportionment, arranged the exhibits, opened the gates and allowed the public to enter without paid admissions. If that plan were adopted, there would be no fairs in the state of New York, unless they were conducted solely under state auspices.

A large number of elements enter into the makeup of an up-to-date fair. I will concede that the exhibits, the educational features and the moral tone of the exhibit should not in any way be subordinated to any attractions, such as the horse race, or other entertainment features. Nevertheless, the vast number of people who assemble upon the fair grounds come there for a double purpose: They come for a day of recreation; they come for a day of pleasure; they also come to learn what their neighbors and friends are doing along agricultural lines. Therefore, it takes all of the present elements to make up the successful and acceptable fair.

I agree fully with the gentlemen who preceded me in relation to elevating the status of judging, and protecting the exhibitors. I would like to see the proposition thoroughly discussed of how we can eliminate the professional exhibitors, and stimulate interest in utility animals and in the general development of agricultural pursuits. To accomplish this is one of the perplexing problems of the present time. There is a woeful lack of interest among the farmers in preparing for exhibits and entering live stock or agricultural exhibits, to compete with what has been very aptly termed the "circuit rider." On the other hand, it is argued that the farmer comes to the fair for instruction, consequently he should be afforded the opportunity to inspect everything extra fine in the way of pure-bred stock or high-class agricultural exhibits. I think there is a good deal in this argument and I firmly believe that standards can be elevated by the display of live stock and agricultural exhibits of high grade. If there were some way by which exhibits could be classified so that the utility animals of the immediate vicinity might be brought up to a higher standard, and the farmers of the immediate locality become interested in their local fairs and personally identified therewith as exhibitors, it would do more to strengthen and help fair organizations than any other one thing.

There is one important thing upon which neither of the gentlemen preceding me touched. In most instances we advertise a four-day fair, but, in reality, there are only one or two days. That is for the reason that by tradition the first day is regarded as "Get-on" day, and the last day as "Get-away" day. The exhibitors will have more respect for the society, and for the fair association, if they insist that all exhibits be in place at nine o'clock of the opening day, and that no exhibits shall be removed until four-thirty on the last day of the fair. That gives the society opportunity, in case of bad weather, to distribute the business, making financial loss less liable. It is not fair to the state. We advertise that we are to give a four-day exhibit, we accept the state apportionment upon that basis and we ought to make our rules and regulations such that four-days' exhibit will actually be given.

In Binghamton we made the first day, Children's Day. It has been a great success. Our schools close at noon. We invite the various singing societies of the schools and other organizations to participate, and offer liberal premiums in the way of banners for the primary and intermediate departments. Last year we sold, at reduced rates, upward of six thousand school children's tickets. We extended the courtesy to all the teachers on that day and arranged a program that would be helpful and instructive to the children, so that, for the last five or six years, when we have opened our fair on Tuesday morning, everything has been in readiness. Consequently the first day has proved most profitable and satisfactory. It is possible for all fair societies of this state to do something of that character, if they set about it in the right way. Furthermore, I know of no advertising medium equal to the children.

Special features on different days are an important element. We tried G. A. R. Day and it was a success. We tried Firemen's Day and it brought us a larger crowd and was an unqualified success. We arranged a program of firemen's contests on the grounds, hose races and things of that character, and stimulated a widespread interest. It attracted not only crowds of local people but trainloads of excursionists as well. They had a good time on the fair grounds and a day of splendid enjoyment. They departed to their homes well pleased, and we, as a fair society, profited thereby.

Those who bring their exhibits to the fairs are entitled to a comfortable and satisfactory place to show them. The man who has fancy stock, or stock worthy of exhibit, should be provided a reasonable place to display it and the public should be given a good opportunity to inspect it. These exhibits should in no sense be relegated to the rear or subordinated in any way to any other feature of the fair. It is up to the fair authorities to provide suitable quarters for the exhibition of live stock. They should not be asked to occupy unsanitary and unwholesome surroundings.

I think that locality makes considerable difference as to what should be provided in the way of special attractions. In the larger towns special amusement features are necessary, but they can be carefully selected. They may be educational in character, wholesome in tone, and of a nature that elevates rather than injures. Entertainment features that are instructive can be added as special attractions and improve and increase the attractiveness of the fair.

As has been stated, there are upwards of ninety fairs in the state of New York, scattered through upwards of fifty counties. That their educational features play a prominent part in the present era of agricultural education, nobody will gainsay. They are doing a splendid work in that respect. For the most part, they are paying liberal premiums and they are offering inducements for the improvement and betterment of agricultural exhibits and live stock of all kinds. They are part and parcel of the great educational system along agricultural lines in the state of New York to-day. They can be made even more effective, if we can secure the cooperation from the state to which we feel, under the existing conditions, we are entitled.

Fair societies of the state of New York feel that appropriations should be increased from two hundred and fifty thousand dollars to three hundred thousand dollars. We believe that in asking it we are justly entitled to it. If we conform to the regulations, requirements and work along the educational lines demanded by the state, we need a little more money with which to do it.

The State Fair of New York is doing splendid work along educational lines, and it should be generously maintained by the state. They have asked, I understand, this year for two hundred thousand dollars with which to erect new buildings, and I think the state allows something like forty thousand dollars per annum to be paid out in premiums, and it makes additional appropriations for other purposes. As a citizen of this great Empire State, I think the money is well expended. But we of the town and county societies feel that if the state society is entitled to three hundred thousand dollars, we are not asking anything unreasonable if we ask the state to distribute a like amount among the ninety fairs, divided among the fifty counties of the state. Ninety fairs, in the aggregate, entertain and instruct as many or more people than the State Fair, because only those who can afford the time and money can come from a great distance and visit the State Fair, while the great percentage of the population of the state, particularly in the remote portions thereof, must and do depend upon the town and county fairs of their respective localities.

We are willing to do all that we can along educational lines. While the fair which I have represented for the last ten years is in a city of approximately fifty thousand people, and perhaps our policy has to be carried out somewhat differently than the average county fair, we strive continuously to see to it that the agricultural exhibits are paramount, that the display of live stock, agricultural and horticultural products, and farm implements is the leading feature of the fair. We provide entertainment, we provide suitable races, under proper auspices, and it has been our effort to keep the tone up to the standard that we know the state of New York requires.

I think it is not amiss at this time to pay just a word of tribute to the Honorable Raymond A. Pearson, the outgoing commissioner. Commissioner Pearson has been a friend of the agricultural societies. He has done all within his power to elevate the standard of the town and county fairs of the state of New York. He has always been ready to give information, and always ready to give assistance. He has made a splendid commissioner. He has elevated the standard of agriculture in this state to a very high plane. I think that the fair societies particularly owe him hearty thanks for what he has done in the interests of agricultural and fair promotion in the Empire State. I am delighted to hear that the incoming commissioner, Mr. Huson, is a man a good deal the same type, intensely practical, friendly to the fair societies, and a man who, I have no doubt, will maintain the high standard set by Commissioner Pearson. While we deplore the departure of Commissioner Pearson, we greet with pleasure the incoming commissioner, Mr. Huson. We want to bespeak his hearty cooperation in fair promotion in this state; we, as an association, want to bespeak his help in the attempt to keep the town and county fairs up to a standard that will be acceptable to him.

It is a matter of cooperation, of all working in unison and harmony. While the fairs to-day are a great educational factor along agricultural and other lines, they can be made more valuable. If the state can see its way clear to increase our appropriation from two hundred and fifty thousand dollars to three hundred thousand dollars, we can safely promise far better results. The fair societies want to do just what they should do. They want to keep the tone of the exhibits right, and they want to eliminate everything that is harmful and injurious. We want you to come to the fairs and have a good time along reasonable and proper lines. We want to make the exhibits attractive and the amusements diversified and elevating.

SPEAKER MERRITT: I appreciate very much the compliment which you have shown me in asking me to preside at this session.

As Commissioner Pearson may have business which he wants to bring before this body before adjournment, and, in fact, in deference to what seems to me to be the proper method of procedure, I relinquish the chair to the gentleman who called the meeting to order and turn it over to Commissioner Pearson.

THE PRESIDENT: Before Speaker Merritt retires I wish to say to him, on behalf of this society, that we are very much indebted to him for his kindness in presiding over this session. In my experience in legislative matters with five different legislatures, I am glad to say that I never yet have gone to Mr. Merritt upon a matter requiring legislative attention along agricultural lines—and I have gone to him many times—but that I have had his most courteous hearing, his fullest sympathy and I believe without exception he has stood in these measures on the farmers' side. Speaker Merritt's presiding over this session this afternoon is only another evidence of the work he is trying to do.

We will now resume our business, and hear the report of the Committee on Resolutions, from Chairman Wilson.

REPORT OF COMMITTEE ON RESOLUTIONS

T. B. WILSON

These resolutions should be acted on separately, therefore, I will take them up separately.

Resolved, That a standing committee on cooperation, consisting of five members, be appointed by the president to promote the cooperation of producer and consumer of foodstuffs.

The resolution was unanimously adopted.

Resolved, That this association heartily approve a movement inaugurated by Commissioner Pearson in interesting the boys of this state in taking a greater interest in agriculture by having a company of boys attend the State Fair, assisting in various departments, and thus getting lessons in agriculture that cannot be secured in any other manner, and we recommend its continuance.

The resolution was unanimously adopted.

MR. SANDLES: This resolution reminds me that I ought to pay my own little tribute to Commissioner Pearson for this suggestion. I knew last year he was promoting this idea of having the boys come in from the different counties to the State Fair. We tried that in Ohio. Nothing we ever did was so popular and so beneficial as the bringing of one hundred boys to the Ohio

State Fair last year. I gave them a little talk and asked them a few questions. I asked them how many had never been on a railroad train before. Three of them held up their hands. I asked them how many had never been outside their own county before. Seventeen of them held up their hands. That was a new experience for those boys.

Our state next year will pay the expenses of two boys from each county of Ohio. I know that every boy in Ohio will thank Commissioner Pearson from the bottom of his heart for having invented that idea.

MR. WILSON: WHEREAS, It is admitted that it is desirable that the country producer and city consumer be brought into closer relation, and that it is desirable that cooperative methods be adopted to bring about such relation; be it

Resolved, That the president of this society issue a call for a delegate meeting, to be held in the near future, at such time and place as in his judgment seems best, for the purpose of working out a plan of action which shall meet with the approval of the organizations represented; that he shall invite the Grange, fruit, vegetable and floral associations, cooperative associations and other societies interested as producers and also consumers' clubs, labor unions and other interested organizations from the cities to send delegates to such convention.

MR. WHITE: As the introducer of that resolution, I would like to say a few words in answer to the position that was taken by some of the gentlemen present in relation to working out the cooperative scheme at the present time. It is not contemplated on my part that any definite action in the way of a state institution should take place, but to formulate definite plans and bring out some of the main features of successful cooperation. There is a great deal of detail to be worked out that the average community does not understand. We have to get lessons from the West and the South. I should recommend certain specific work to be mapped out.

The resolution was unanimously adopted.

MR. WILSON: WHEREAS, The Honorable Raymond A. Pearson has served in a most efficient and acceptable manner as president of the New York State Agricultural Society for the past three years; and,

WHEREAS, Under his able administration this old and influential society has been rejuvenated and again made a great power for good to the agricultural interests of this state; and,

WHEREAS, The relations of President Pearson with the officers and executive board have always been most cordial, pleasant and effective, it is now with great regret, expressed by official action of the executive board, that President Pearson positively declines to accept a re-election; therefore, be it

Resolved, That the officers and executive board of the New York State Agricultural Society hereby express their deep appreciation of the valuable services that President Pearson has rendered to this society and to the agricultural interests of the state, and that they deeply regret, as an official board speaking for the whole society, that President Pearson has found it necessary to decline to serve another term as president; be it further

Resolved, That a copy of these resolutions be spread upon the minutes of the meeting of this society.

This is an action taken by the Executive Committee of this association. I hope it will be endorsed by the entire association.

The resolution was unanimously adopted.

MR. WILSON: *Resolved,* That the officers, executive board and members of the New York State Agricultural Society hereby express their appreciation of the faithful and efficient services of Edwin H. Chapman and William B. Jones, retiring secretary and treasurer, respectively, of this society, and hereby express their sincere thanks to them for the services they have rendered to this society.

The resolution was adopted unanimously.

MR. WILSON: *Resolved,* That the New York State Agricultural Society hereby express its thanks to the Lieutenant-Governor and to the Speaker of the Assembly, and to the Superintendent of Public Buildings, for the splendid accommodations they have afforded to the society for the holding of its annual meeting in the capitol.

The resolution was unanimously adopted.

MR. WILSON: *Resolved,* That the New York State Agricultural Society hereby express its sincere thanks to the press of the city of Albany for its splendid support and cooperation in aiding the annual meeting of the society for 1912 to exceed any previous meeting in its interest and helpfulness.

The resolution was unanimously adopted.

MR. WILSON: *Resolved,* That we shall appreciate the efforts made by the daily and weekly papers of the city of Albany and of the state in communicating the interesting and instructive proceedings of the meetings of this society to the people of the state.

The resolution was unanimously adopted.

MR. WILSON: *Resolved,* That a copy of these resolutions be spread upon the minutes of the meeting of this society.

The resolution was unanimously adopted.

MR. WILSON: At Cornell University there has been a large collection of standard works from foreign countries, relating to cooperative work, studies on food products, etc., that are accessible to anyone in the state of New York who sees fit to go there to make a study of them. A bureau will soon be established there to put out questions to the different organizations, both consumers and producers, in the state, for the purpose of formulating some possible solution.

THE PRESIDENT: Your president wishes to say that he very deeply appreciates the adoption of the resolution which the members have voted upon this afternoon, referring to his service as president of the society. It was not necessary for you to adopt such a resolution; and he appreciates it the more for that reason.

Service as president of the New York State Agricultural Society is as honorable an agricultural office as can come to any man. The agricultural interests of New York are enormous. We may fail to realize it, but the possibilities of these agricultural interests are something actually beyond our comprehension. These agricultural interests will be developed to the best and fullest extent only when men like you are banded together in unselfish effort to promote them.

The retiring president wishes to congratulate you most heartily upon the selection of his successor. He does not know how it would have been possible in any way to have found a man more capable of filling the office.

The president wishes to express his most sincere thanks, officially, at this time, to all those who have assisted in making this meeting the most successful annual meeting the old State Agricultural Society has ever held. He would like to mention the speakers by name but he will especially mention Governor Dix, who presided at one of our evening sessions, Lieutenant-Governor Conway, and Speaker Merritt, because of their courtesy in meeting with us and giving their time to our sessions and otherwise showing their deep interest in our work.

The meeting was then adjourned.

EVENING SESSION

The meeting was called to order at 8 p. m. in the Assembly Chamber, by President Pearson.

THE PRESIDENT: We have been discussing cooperation during our sessions of the past three days. Farmers believe in cooperation; they believe that they can accomplish more for themselves and for the world when they work with others than when they work by themselves alone. It is with very great pleasure that I am able to say that the program of this evening is prepared in cooperation with certain women's organizations in the city of Albany. In cooperation with us to-night are the Woman's Club of Albany, of which Mrs. Elmer Blair is president; the Albany Mothers' Club, of which Mrs. Robert C. Wagner is president; and the Central Christian Mothers' Union, of which Mrs. Charles F. Stowell is president. We feel that the women of Albany pay a high compliment to the societies and to the speakers by their presence here in such large numbers to-night; and I am very proud indeed to acknowledge that we feel a high compliment has been paid to all of us by the presence here of the first lady of the state, Mrs. John A. Dix.

We have been discussing these days the cost of living. It seems as though we hear that subject wherever we go, whether it be on the railroad train, in the halls of learning, on the street, in the office, or in the home. It is an ever-present subject. Its ever-presence reminds me of an incident which occurred in a railroad train, in which I was riding, some time ago. The car was crowded. A little child, less than a year old, was crying as though its heart would break, and you know what a noise such a child can make. Just behind that child sat a mother with her child, about three or four years old. That older one looked at the little baby with its eyes filled with sympathy. Finally, the little child suddenly stopped crying; the train was standing, and it was perfectly still in the car. The older child looked at its mother and said, so all could hear: "Mother, what do you think is the matter with that baby; don't you think there's a pin sticking in it?"

The cost of living is the pin that is irritating the skin of the body politic, and it has come to be a very serious irritation, so that the crying which has been going on for a long time has become rather loud.

We really think that the farmers of the state of New York have taken a long step toward the solution of this problem during our meetings of the past three days. We have been discussing, among other subjects, the cost of producing farm products, but that is only half the cost of living, because everything that is produced must be used, and where is it used but in the home? So the homemakers have to do with fully fifty per cent. of this problem of the cost of living. Farmers are homemakers. This subject, for a farmers' meeting, then, is in no way inappropriate; and city people are homemakers, so that it is appropriate alike to them and, for that reason, we farmers are very much pleased to see so many city people with us to-night.

The homemakers' problems are as numerous and as intricate as are the problems of the wage earners; and to-night we are going to take some of them up in a very plain, straightforward, matter-of-fact way. We have on our program some of the most noted experts, not alone in New York State but in the entire United States, to talk to us to-night. The papers will be comparatively short, to provide opportunity for discussion after the papers have been presented.

Our first speaker is Professor Mary D. Swartz Rose, of the School of Household Arts of Columbia University, New York City.

HOW A KNOWLEDGE OF FOOD VALUES WILL HELP THE HOUSEWIFE TO REDUCE THE COST OF LIVING

Mary D. Swartz Rose

I think a good many of us feel that the pin that your Commissioner has been talking about is a great big hatpin, and if we cannot pull it out perhaps we can at least shorten it and make it more comfortable for all concerned.

When Commissioner Pearson wrote to me and asked me if I would come here to speak to you, I was in the city of Washington, and I thought the experiences I was having then bore very directly upon the housewife's problem. I found that wherever I went, following directions as well as I could, I usually had to walk about five or six blocks when they told me the car went past the door. I found that I paid about twice as much for my meals as any of the inhabitants of Washington, because I did not know the best places to go, and I found that here, there and everywhere I was paying in time and money and energy the price of ignorance. Now, it seems to me that that is just what the housewife is doing all the time when she tries to feed her family without a knowledge of food values. Her methods must be, to a great extent, haphazard, when she has custom merely to guide her. She has to pick out reputed foods because she has no chart to help her in these unknown realms.

Perhaps I can make a little of the way clear to-night. I know that it is an unexplored field. For the last year or two I have been reading almost monthly, with a great deal of interest, a farm journal which is devoted very largely to the interests of women. I have learned a great deal about feeding poultry and cows and sometimes pigs, but it is only now and then that I get a paragraph on how to feed the baby or how to make some new dish. I have not seen any consecutive information on this very important subject.

The first thing that we need to recognize in considering this problem is that we are dealing with a machine that works all the time, even when we are asleep; we are like the clocks with the wheels going around inside. We must take account of that in our feeding problem very directly. Then we must add to that work such activity as comes in the course of our usual occupations when we are awake. We must recognize also that when people are growing the wheels inside go more rapidly, and usually the machinery outside goes more rapidly, too, and we have to supply more food in proportion to the size of the individual, the younger he happens to be.

We measure body requirements in terms of calories; that is the scale. I have made a little chart to show you just what this means in terms of common weight. If you know how much you weigh, you can form some idea of your requirement for twenty-four hours.

FOOD REQUIREMENT

Age	*Calories per Pound*	*Calories per Day*
1-2 years	45-40	900-1200
2-5 years	40-35	1200-1500
6-9 years	35-30	1400-2000
10–13 years	30-25	1800-2200
14-17 years	25-20	2300-3000
Adults	15-20	2300-3000

You will see clearly that, while the total amount is least between one and two years, the amount per pound is greatest. With adults, the chief cause of variation in the amount per pound is the difference in muscular activity.

Having found a scale by which to measure the food requirements of the different members of the family, the next thing to do is to find out how much working power we can get out of our different kinds of food material. Foods vary so much in their composition that we have to adopt a unit basis. The most satisfactory unit for this purpose is one hundred calories. Here are one hundred calories in the form of plain white bread, two medium-sized baker's slices; in terms of an apple, one rather large one. Here is exactly the same working power in terms of an orange; or, if you prefer, you may take it in the form of dry prunes of which I have four; or you may take four dates. There are one hundred calories in one medium potato, one banana, one egg, three lumps of sugar, two large onions, seven or eight peanuts, or five-eighths of a cup of milk. If you wish food in very compact form, take one butter ball, such as we usually serve on the table, made of a level tablespoonful of butter, or a rounding tablespoonful of rice.

We have one other point to consider and that is the fact that in childhood we must add to our body substance, and during adult life we must repair some wear and tear; that is, we must have what are called "building foods." Hence, besides knowing fuel value we must take into consideration that there must be different kinds of foods in the diet, though practically all foods supply more or less fuel. According to composition we classify foods as proteins, fats, carbohydrates and ash. I have a chart showing the chief kinds of food materials in each of these groups. By selecting some foods from each we can make a balanced ration.

PROTEIN FOODS	FAT FOODS	CARBOHYDRATE FOODS	ASH FOODS
Milk	Milk	Milk	Milk
Cheese	Butter	Starch	Eggs
Eggs	Cream	Cereals	Green Vegetables
Meat	Bacon	Potatoes	Cereals from Whole Grains
Fish	Olive Oil	Sweet Fruits	Fruits
Dried Peas	Egg Yolk		
Dried Beans	Lard		
Nuts	Fat Meats		
	Nuts		

For building material the most important groups are the protein and ash. From the foods in the first three columns we get most of our working power in terms of calories. Notice that milk supplies each kind of food material needed by the body. It is a most wonderful food on this account. Besides satisfying the body requirements in all ordinary ways, it has some still unexplained power in growth, so that young things nourished on it progress much better than with any other food which we can possibly substitute for it. While the cereals are included only in the carbohydrate column, some of them supply considerable protein. In making up the ration for the day, we have to choose some food materials from each of these columns. Selecting three or four one-hundred-calorie portions from the first column, eight or nine from the second, about fifteen from the third, and the remaining two or three from the fourth, it is possible to have a fairly well-balanced diet for the average man.

How is all this going to help in the reduction of the cost of living? In the first place, the market cost of a food has no relation whatever to its nutritive value. Here is a chart showing equivalent fuel values, arranged in order of cost of one-hundred-calorie portions in the New York markets:

PROTEIN FOODS

	Ounces	*Cents*
Oysters	7.2	12
Eggs	2.1	5
Ham, boiled	1.6	4
Codfish, salt	3.3	3
Round Steak	2.3	2½
Almonds, shelled	0.5	2
Milk	5.1	1⅓
Beef, flank	1.3	1¼
Cheese, American	0.8	1¼
Peanuts, shelled	0.6	1¼
Macaroni	0.9	⅘
Corned Beef	1.3	¾
Dried Beans	1.0	⅓
Dried Peas	1.0	⅓
Skim Milk	9.4	
Cottage Cheese	3.1	
Buttermilk	9.7	

FAT FOODS

	Ounces	*Cents*
Cream (40%)	1.7	2
Butter	0.5	1
Bacon	0.5	1
Olive Oil	0.4	1
Lard	0.4	⅗
Suet	0.5	⅛
Salt Pork	0.4	⅓

CARBOHYDRATE FOODS

	Ounces	*Cents*
Puffed Wheat	1	2⅔
Puffed Rice	1	2

CARBOHYDRATE FOODS — (*continued*)

	Ounces	*Cents*
Bananas	3.5	1⅖
Prunes	1.2	1
Corn Flakes	1.1	1
Raisins	1.1	⅘
Macaroni	0.9	⅘
Potato	3.6	¾
Rice	1.	⅗
Bread, white	1.3	½
Rolled Wheat	0.9	½
White Flour	1.1	⅓
Sugar	0.9	⅛
Oatmeal	0.9	⅓
Corn Meal	1.0	¼

ASH FOODS

	Ounces	*Cents*
Celery	19.0	18
Lettuce	18.0	10
Canned Peas	6.3	7
Canned Tomatoes	16.0	5
Carrots	7.7	5
Oranges	8.5	4
Turnips	9.0	3
Apples	7.5	2½
Bananas	3.5	1⅖
Dried Peaches	1.0	1½
Milk	5.1	1⅓
Figs	1.1	1⅓
Dried Apples	1.2	1
Parsnips	7.1	1
Cabbage	11.1	1
Dried Peas	1.0	⅓

You will notice that a number of the foods are repeated. This is because most of them contain at least a little of each of the necessary food elements, but usually one or two are especially prominent. Macaroni contains both protein and carbohydrate; so do other cereals, such as oatmeal, rolled wheat, and even white flour. Milk is most rich in protein and ash, and yet in a quart of milk we get enough sugar to make seven lumps of sugar; it would be unpleasantly sweet if it were not for the fact that the sugar is of a different kind from cane sugar. Nevertheless, it has the same fuel value. We also get enough butter to make three butter balls from the same quart. This makes milk the most valuable of foods. When we use it for the sake of its protein or ash, we are at the same time getting these other important foodstuffs in it. Milk has a greater variety of ash required in body-building than any other food, so that it is indispensable in the diets of children. Sugar is comparatively a cheap food, but it supplies nothing but carbohydrate, so we cannot put so very much of it in the diet without leaving out ash and other things. Oatmeal appears just as cheap as sugar, but if we have to choose a few foods it is much more important, for when we put it in for carbohydrate, we get considerable protein and much ash for nothing, as it were. Next to milk, oatmeal is one of the most valuable foods for growth. Since I have given the weights of these one-hundred-calorie portions, you can readily calculate just what you would have to pay for each one. The woman in the country has the great advantage over the woman in the city in that she has two of the most valuable foods there are, in the best possible condition, at a much lower price than I have indicated. I mean milk and eggs. Even if she feels that she must sell her cream, she still has the most valuable part of the milk left, as far as its value to the body is concerned. It takes only one and one-half glasses of skim milk to make one hundred calories, and think how many dishes an extra amount of fuel can be tucked into in that way, to say nothing of the ash. Meat protein is not one bit better for us than milk protein, and usually it is much more expensive.

Now I should like to show you just how this knowledge helps us in actual practice. I will work out on the blackboard two days' rations of equal food value, and we shall see how much difference there is in the total cost.

I. EXPENSIVE

Food	*No. 100-Cal. Portions*	*Cost Cents*	*Food*	*No. 100-Cal. Portions*	*Cost Cents*
Oysters	1	12	Bread	5	2½
Eggs	2	10	Celery	¼	4½
Milk	1	1⅓	Lettuce	1/10	1
Almonds	3	6	Oranges	1	4
Steak	3	7½	Tomatoes	¼	1¼
Cream	3	6	Potatoes	1½	1⅛
Butter	4	4	Peas (can)	½	3½
Bacon	1	1	Sugar	2	⅔
Olive Oil	1	1			
Puffed Wheat	1	2⅔	Total	30⅗	70 1/24

II. CHEAP

Food	*No. 100-Cal. Portions*	*Cost Cents*
Cheese	2	2½
Macaroni	2	1⅗
Milk	6	8
Beans	1	⅛
Salt Pork	2	⅜
Butter	1	1
Oatmeal	3	1
Bread	5	2½
Cabbage	¼	¼
Parsnips	½	½
Bananas	1	1⅖
Raisins	1	⅘
Potatoes	3	2¼
Sugar	2	⅜
Total	29¾	$23\frac{7}{15}$

It does not matter whether I put coffee down or not, because that has no food value. In both cases we have well-balanced rations. I have selected three or four portions from the first group, six or seven from the fat group, fourteen or fifteen from the carbohydrate group, and three or four from the ash group, so that they are all represented.

You see that the market price has nothing whatever to do with the nutritive value of food. The housewife, realizing that, can pick and choose at her pleasure and, within wide limits, can control absolutely the cost of a day's supply. This does not mean that she can feed people for nothing; there are limits beyond which we cannot go; we must represent these different groups, and you will soon see that you cannot get thirty portions anywhere on this chart for nothing. The best you could possibly do would be to get it for ten cents, and then you would not have all the groups well represented.

This selection of a well-balanced, low-priced diet is perfectly practical. It is really very fascinating. The students to whom I have the pleasure of teaching this subject become so interested in it that they do not want to go to bed at night, so apply it for yourselves. You have only to write to the College of Agriculture and ask for Professor Flora Rose's bulletin on human nutrition, which shows the weights of many more one-hundred-calorie portions than I have given, for a larger variety of foods than I have been able to show you here; then sit down and figure out the cost of each, which is not at all difficult. Every one of you can get such a list free from your own agricultural college, if you will write and ask for "Human Nutrition, Parts 1 and 2," by Professor Flora Rose.

THE PRESIDENT: Your presiding officer neglected to make one very important announcement. If any woman of Albany profits by introducing any economy in the dietary that is suggested by Professor Rose, she is to be the one who profits thereby, and no man, because he is so fortunate as to be here to-night, is to be permitted to cut down the allowance for food supply in any home.

The next speaker has won considerable notoriety. I am sure it was not desired, and I am sure it was most creditable to her that she won this notoriety. She is going to tell us how it all happened. The speaker is Mrs. Bleecker Bangs, of Brooklyn.

WHOLESALE BUYING BY NEIGHBORHOOD CLUBS

MRS. BLEECKER BANGS

I started buying for a club of six housekeepers, that is, five beside myself. I had been in touch with matters in the country to such an extent that I knew the farmers received very little for their produce. When I came back to the city, for a great many seasons I visited the wholesale markets, where I found that the prices we paid our stores were very different from those in the wholesale market. So I got together five housekeepers. We agreed to try, as an experiment, buying in bulk; that is, by what they call "wholesale" quantity. Now, that does not mean a small measure, nor it does not mean a basket; but it means a barrel, a crate, a box, a dozen of everything, or more. We agreed to divide it up between ourselves, and I am going to read you some of the prices that the wholesale marketmen asked for their goods, then tell what the retail men asked, and you will see the difference.

These are the prices for October. Of course, the prices for December are increased. For October, wholesale: We bought a barrel of cauliflower for a dollar; that was thirty heads at three and one-third cents each; and our marketman at the corner was asking twelve and fifteen cents for them, the very same kind. We bought a basket of lettuce, twenty-four heads, for three cents a head; and our groceryman was asking about six cents. We bought tomatoes by the crate, thirty quarts; I think some crates have forty quarts. They were selling at the rate of two cents a quart, and we were paying to the corner grocer eight cents a quart. For hubbard squash we paid one dollar a barrel, six cents each;

the groceryman asked fifteen cents for the same thing. Carrots and turnips we bought at fifty cents a bushel; by the quart, fifteen cents. We bought celery, and everything wanted.

The other housekeepers agreed that I should do the buying, so once a week I went to the market. I found that the wholesale men were perfectly willing to sell to me. There was only one trouble: They were afraid that the retail men would see their wagon stopping at a private house. It seemed to me very strange that the wholesale men would be so willing to sell, and yet be held back in the delivery point. I learned that they have a code of honor, which means that the wholesalers are not supposed to sell to a consumer. The consumer is really paying more for all goods, week by week, from the grocery than it is necessary to pay if one buys wholesale. The retail man says to the wholesaler: "Don't sell to the consumer," but, on the other hand, that very retail man gets from the factory second-rate goods. The result is that the housekeepers have to pay ten, twelve and fifteen cents for cans of goods they can buy wholesale for eight and nine cents a can. In produce, butter and eggs, it is the same.

I have found that the wholesalers now seem to be waiting for something to turn up; in other words, they are waiting for the housekeepers to go to market. They would rather sell for cash than to have long-standing bills with the grocers. It only rests with the housekeepers to lower their bills by going to the market.

I found also that on the market there is nobody to represent the farmer. I have found all the time things thrown out because they were a little bit damaged. There was nobody there to look after them. The farmer did not have one single representative either at Washington Market or Wallabout Market. I have seen whole crates and barrels of things pushed aside because they had not been well packed. I found that the things that are packed well and come to market in good style, good shape, and well preserved, bring a far better price than those which are packed carelessly and come there half damaged. That is the reason the farmers lose a great deal when they ship to market. It is the farmers' own fault if they lose.

Another thing was that the housekeepers have only to go to the wholesale men and tell them that they are buying for a number of families, and if they are truthful about it the wholesalers will not refuse to sell to them. The only point now is that they are particular about delivering at a private house. I do not see why there cannot be some express service that will do away with part of the middlemen's profits. If there is an express service, it will bring the wholesalers' prices right to the consumer, which is all we need. The wholesalers now deliver to me because some of them have been amused at the way I bought my goods. They deliver them near the house.

In December oranges were, by the case, twenty cents a dozen, instead of thirty-five cents a dozen. We have had ninety bananas, sixty-five cents a bunch, that were selling three for five cents. We have had mixed nuts, ten pounds for one dollar and a half, that were selling for twenty-two cents a pound, retail. We have had eggs by the dozen, twenty-eight cents a dozen, when they were retailing at thirty-five and thirty-seven cents. Butter was thirty and forty-one cents a pound, when it was retailing for fifty cents for the very best, and thirty-seven cents for the second.

That only shows what one housekeeper has done, and I do not see why more cannot do the same.

THE PRESIDENT: The occupation of agriculture is one that interests both men and women. A good many farms in New York State are being run by women. Farmers recognize that their problems are problems for both. So they believe that householders' problems should be problems of men and women. To emphasize the fact as well as possible, some men have been put on the program of the evening, and we have been careful to pick out the specimens of men who would look well going down through the streets of Albany in the early morning with market baskets on their arms. We shall hear now from one who himself was a producer, living on a farm and sending to the city, until a few months ago, when he came to live in Albany—Mr. Harry B. Winters, of the State Department of Agriculture.

HOW CITY PEOPLE MAY BUY DIRECT FROM THE PRODUCER

HARRY B. WINTERS

For the past fifteen years I have lived on a farm, until a few months ago. One of the first things that attracted my attention on moving into town was the increase in prices of food over what I had been accustomed to as a farmer. No railroad passing through my home town reaches Albany. I soon found that the delays in transfer from one railroad to another made it difficult to ship perishable goods. It also takes two express companies to bring a package from that town to Albany, and their combined charges were so high that I began to look elsewhere. If that village and Albany were on the same railroad and were served by the same express company, my problem of buying direct from the producer would be easy, because I would know just where to buy everything that I needed. However, I soon found a creamery in the country that could ship butter direct with only one express charge, and I have been buying there with the following results:

June 5, 1911, a 30-pound tub of butter at 25 cents; express 40 cents; total cost, 26⅓ cents a pound. For the sake of checking I do not order again until we are about out, so that between each order we buy a little at the grocery store here in Albany. The grocery butter cost us 30 cents at that time, an advance of only 3⅔ cents a pound. But the country butter was in prints and a very much better quality than the 30-cent butter at the store. July 15, 30 pounds of butter at 27 cents, $8.10; express, 40 cents; total cost per pound, 28⅓ cents. The grocery store butter was 35 cents at this time, saving 6⅔ cents. August 9, 90 pounds of butter at 25 cents; express, 60 cents; total cost, 25⅔ cents per pound. This was put in cold storage here in Albany. On September 5, 30 pounds of butter was taken out of storage and carried the additional charges of 25 cents for cold storage and 25 cents cartage, or a total cost of 27⅓ cents. Grocery store butter at this time was 34 cents, or the saving was 6⅔ cents a pound. On October 21, another 30-pound tub of butter was taken out of storage. Butter at this time was retailing for 38 cents, making a saving of 10⅔ cents. December 1, the last tub of butter was taken out when butter was retailing for 40 cents, making a saving of 12⅔ cents a pound.

The above shows an average saving of 8 cents a pound and a better quality of butter. Part of this saving was probably made by a rising market, which you will not always have. However, I am inclined to think that a saving of 5 cents a pound can be made by buying direct from the country. And I wonder whether a grocer can afford to cut butter and sell it in small quantities for a profit of less than 5 cents a pound.

On June 14, I bought 30 dozen eggs from the country at 19 cents a dozen; express, 30 cents; total cost per dozen, 20 cents. The grocery price at this time was 25 cents, a saving of 5 cents a dozen. July 15, 30 dozen eggs at 22 cents; express charges, 30 cents; total cost, 23 cents; grocery cost, 30 cents; a saving of 7 cents. September 22, 30 dozen eggs at 26 cents; express for some reason was 50 cents; total cost, 27⅔ cents; grocery cost at this time, 36 cents; a saving of 8⅓ cents. October 1, 30 dozen eggs at 33 cents; express, 30 cents; total cost, 34 cents; grocery cost, 40; a saving of 6 cents. This is an average saving of 6½ cents a dozen. On December 5 this country grocer quoted them at 47 cents a dozen, or 48 cents delivered here. This price was so high that we are buying what we must have at the store, and expect to enjoy those country eggs again when the price goes down.

One of the ways to lower the cost of living is to buy food in season. We have bought apples by the barrel in western New York for two dollars and a half. The freight and cartage was seventy-five cents; total, three dollars and twenty-five cents. This may not seem cheap, but you should have seen the apples, practically every one perfect from top to bottom. I saw apples in a railroad restaurant at Utica a few nights ago at ten cents each that looked just as good but no better. We have also bought peaches of this fruit grower, eminently satisfactory both in quality and price. If the weather were warm enough to ship by freight, I should like to order another barrel of apples of this man at once, but the express charges are too high to make the plan profitable.

About potato-digging time I ordered three barrels of potatoes of a dealer along the New York Central Railroad and asked him to delay shipment if necessary until the potatoes were thoroughly ripe, so that they would keep well. The order was acknowledged with thanks and shipment promised. After some time they wrote me that the letter had been mislaid, but they would be glad to make shipment if I was willing to take the risk of damage by frost in transit. It was so late that I countermanded the order. During this time I had no difficulty in buying a car of potatoes one day from this same firm for a certain state institution. So you will see that this dealer at least was giving his time and attention to large orders and not small ones. On December 8 I bought of a regular dealer on the public market here in Albany two barrels of potatoes for $6.70. Figuring as carefully as I could, these would have cost me $9.60 bought in small quantities at the grocery, a net saving of $2.90. The saving was more than $2.90, because I looked around until I found some very good potatoes, and was more particular about the quality than the price. Potatoes should be bought in quantities because they are easily damaged by handling. We have also made nice savings by purchasing turnips by the barrel and parsnips by the bushel. We find it possible to save about fifteen per cent. by ordering canned goods and general groceries from a wholesale house.

I have heard a great deal about the dishonesty of the middlemen and retailers. This has not been my experience. I have the highest respect for the grocerymen with whom we deal. Their bills have been correct and I regard them as absolutely honest. To me a large part of the high cost of living can be traced to the manner of conducting the retail business. The distance from our office to my home is a little over one mile, which I can walk in a little over twenty minutes. Recently in going home one evening, I counted twenty-seven retail delivery wagons. I saw five of these wagons making deliveries. Four out of the five were packages small enough to be carried in the pocket or under your arm. If we demand this kind of service we must expect to pay for it. I do not know what it costs a retailer to deliver, but I have no doubt that it costs more to deliver some packages than the entire amount the retailer receives. If we ever solve this problem we must look facts in the face.

I would like to see a farmers' organization own storehouses in the shipping districts, and selling houses in places like Albany, the selling house to be located on the railroad track to save first cartage. I would like to see this organization cater to the family trade, so that we who live here can buy butter by the tub, potatoes by the barrel, eggs by the crate, and the things we need in quantities, we to pay cash or at least promptly, the price to include delivery to our homes.

The President: I wonder if there are some in this audience who do not know that we have in New York State a great college of agriculture, and that this college of agriculture has one thousand five hundred students to-day, all studying agriculture and home economics. The legislature of our state has recently made an appropriation for a magnificent new building to be devoted entirely to home economics. The department now occupies the entire floor of a large building of the college, but that space is not nearly enough.

We are to be favored by hearing from a member of that department of our state college, who will talk to us upon the cost of living from the homemaker's standpoint. The speaker is Professor Martha Van Rensselaer, of the State College of Agriculture at Cornell University.

THE HOUSEWIFE AND THE COST OF LIVING

MARTHA VAN RENSSELAER

During the past week this association has tried to settle the question of the cost of living by discussing the tariff, the principles of production and consumption, the overproduction of gold; it has not fully decided how the cost of living may be reduced, so it has, as usual, given the women the last word. This fact is significant because it is said that the women of the country are the spenders.

A large percentage of incomes is spent for food, for shelter and for clothing. The women, therefore, are the spenders, because it depends so much upon the skill of the woman as to whether bills shall be large or small; it depends upon her taste, her judgment and her training how wisely this expenditure shall be made. The problem which a man in business has is how on his income he can improve his home, educate his children, and start them upon independent means of support, promote his business and provide for old age. With prices as they have been quoted to-night, we find that his proposition is a difficult one.

On a street car to-day I saw this advertisement of a dealer in household goods, "A word to the wives is sufficient." A word to the wives is sufficient, because they are the buyers. There was a sign in the Jersey City subway which read as follows: "Upon the women depends the success of Jersey City," and then appeared a large display advertisement of goods attractive to the family provider. Attractive show windows, bargain days, marked-down prices, magazine articles and advertisements are skillfully arranged to attract the eye of the spender. This has become a large business to be supported by rising prices in commodities.

The time has come when it is not simply, "Can a man have a larger income to meet increasing demands?" It is considered just as much of an educational problem for a woman to help save the present income. A five-hundred-dollar gain in salary is no better than five hundred dollars saved after that money has come into the house. Sacrifice and skill have been exercised by women in many families to make the burden lighter for the wage earner, to make a dollar go farther that it used to in time of lower prices.

There are many means of saving food and on the service in the household. The skillful housewife allows a cheap roast to follow the luxury of an expensive chicken dinner. An experiment was tried in our domestic science laboratory during the last week. A chicken was bought, live weight, at twenty cents a pound. At the start the chicken weighed four and a quarter pounds. The head was cut off, and it weighed four and one-eighth pounds. It was picked, and it weighed three and seven-eighths pounds. The feet were removed and it was three and three-fourths pounds. It was dressed and weighed three pounds. With the skin, fat, and bones removed it was seven-eighths of a pound. The chicken originally cost eighty-five cents. Therefore, for seven-eighths of a pound of edible material, we had paid eighty-five cents. It makes a difference what kind of a chicken you buy, but this happened to be the chicken bought on that occasion. We are also using in our laboratory eggs which were bought in the summer at twenty-four cents. They have been preserved in water-glass, and do very satisfactory service as a substitute for fresh eggs. These cost, to preserve, from one to two cents a dozen.

The first speaker referred to cereals as a cheap diet. I was reminded of a woman who had charge of a fraternity house at Cornell. She was asked if she made home-made bread. She said she had made home-made bread, but it was so good the boys ate so much of it she had to buy baker's bread of which they ate less. She lost sight of the principle, so well brought out early in the evening, that cereals are a cheap source of energy, and if she could fill the boys

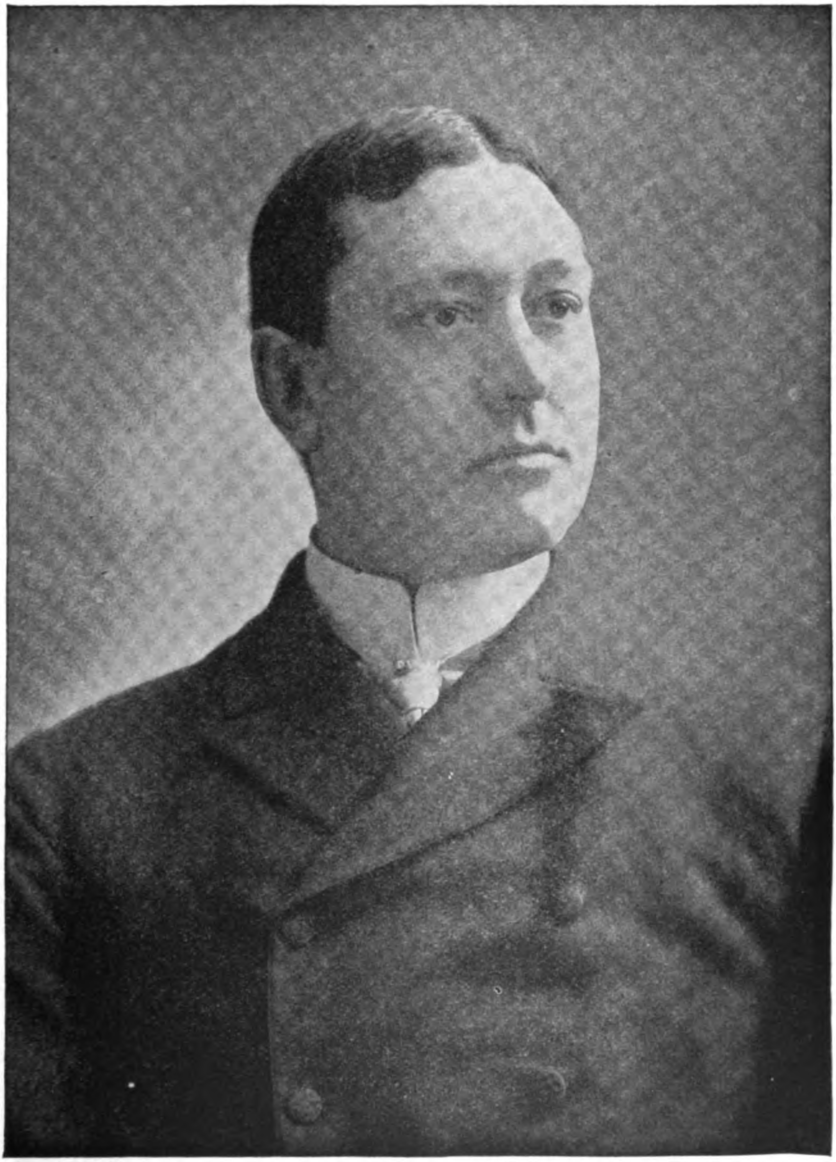

FIG. 48.—F. W. SESSIONS, CHAIRMAN OF PUBLICITY COMMITTEE.

up with her good bread it was much cheaper than for them to have a second order of meat. In one dormitory in the West a person is in the habit of having good, home-made bread, cutting it thin, making it attractive and allowing the students to eat all they will. That saves the more expensive foods.

Poor food, or even good food which is not well served, helps to fill the garbage pail. If we would know the financial situation of families throughout the country, perhaps it would be well to peer into the garbage pail. "Watch the garbage pail" is a good motto in any kitchen. It is necessary to study the reason for the waste of food and correct the difficulty. Recipes for cake without eggs, at this time when eggs are high, are popular in many families, but cake made light with snow or cornstarch has not the same nutritive value as cake made light with eggs. We are told that we must have a certain amount of nutriment, anyway; therefore, in considering prices it is right to consider whether, in the long run, we are really economical in omitting eggs and milk from the diet when they are high priced.

I heard an architect say that he was not worried about the interior of the house if he could make the outside look well. The house is for service as well as for beauty. Economy of space and convenience in doing work are as necessary as in any kind of a workshop. Architects are now considering this element in their profession. A house plan was restudied by a woman, an architect, who was giving particular attention to the construction of small houses, and she found by the restudied plan that she could add to the living space one hundred and sixteen square feet, taken from the hall space. That is, in plan 2 she had one hundred and fifty square feet of hall or stair space, as against, in the poor plan, three hundred square feet. In the improved plan she had four hundred and fifty-four square feet of living space, as compared to four hundred and twenty in the poor plan. She saved, therefore, one hundred and sixteen feet of usable space in the house. When the estimates were made she had also saved one thousand six hundred dollars on the cost of the house. Poorly planned houses in many cases add greatly to the waste of paid service, because we are paying women to travel large spaces. This is as important to the housewife as to the paid maid, and her work should be considered on the same financial principle. For the whole consideration of the cost of living we must accept the proposition that a woman's time is money. We have simply considered so long past, that the material was what cost and lost sight of the time used by the worker.

There is not time here to consider our paying twice for waste, as, for example, when in New York City the garbage is sold, heated, the fat extracted and sold, made into soap and sold back again to the person who gave away the garbage. We have not time to consider the charging system, whereby expensive bookkeeping is required, for you who pay cash at a store pay interest on the money which the groceryman has to invest in order to trust a large percentage of his patrons.

Other expensive factors exist everywhere: Overlapping routes; the extensive advertising, which we are all paying for, due to competition; the sale of small quantities; the number of delivery wagons. It costs, in most places where goods are delivered, from two to three cents to make a delivery, considering the wear and tear upon the wagon, and the cost of the driver and the horses. The unreasonable demands of the customers make it necessary, in the competition of business, to satisfy everyone. This is expensive, and yet it needs to be done to save trade, hence much unreasonable expense.

We have not reckoned with another consideration sufficiently, and that is the cost of efficiency. It was stated, not long ago, that in China the number of births made up for the deaths; therefore, there was no loss. They forgot what it costs to be born and what it costs to die. Those who have made a study of the subject estimate that the cost of a child at birth is ninety dollars; that the average child begins to keep itself at the age of eighteen; that a man is square with the world at the age of thirty-five; he does not begin paying back to the state until he is thirty-five years old.

Then we begin to consider what is the cost of inefficiency. It has been estimated that in workingmen's families every person spends on the average twenty-seven dollars a year for medical attendance, for drugs, etc. With inefficiency there is a decrease of wages, and a lessened production. The final note is this: Efficiency depends upon heredity, proper nutrition and proper hygienic conditions. Therefore, we come back to this proposition, that it is the woman's problem as well as the man's; that a woman's education should include a knowledge of principles which will govern these conditions.

Mr. Davenport, in his book on eugenics, says that there are three hundred thousand insane and feeble-minded; one hundred and sixty thousand blind or deaf; two million that are annually cared for by hospitals; one hundred thousand paupers in almshouses; and he estimates that there is an annual cost of nearly a hundred million dollars for defectives and dependents. Such an array of figures demands a larger education which will govern the principles of heredity and nutrition and hygiene. It means, too, a higher parental and national ideal, the result being a better offspring.

THE PRESIDENT: Our next speaker is rendering most valuable service to the state in reducing the cost of living. After he has finished his short address we shall have a few minutes of the most interesting part of our evening's program. We expect to throw the meeting open for a few minutes of discussion; all of the speakers will then take part in brief questions and answers.

Before presenting Dr. Reichmann, I wish to say to you that, aside from the great value of the work which he is doing from the standpoint of weights and fairness in getting what we are paying for, I, for one, look upon his work as upon the work done by our Pure Food Law, as one of the great moral forces in operation in our state. I claim that when Dr. Reichmann requires a person to give a full pound instead of eight-tenths of a pound, he is enabling a good many other persons to be honest. By that I mean this: If one man is permitted to sell eight-tenths of a pound for a pound, he will be able to undersell others who are giving full weight; his false representations will offset the small difference in weight that the careful observer might notice. Therefore, his competitors, honest men, will be obliged also to cut their weight, and the result is that instead of one person selling short weight, we will have a large number of persons selling short weight, and all will be equally dishonest. When our Sealer of Weights and Measures requires that first dishonest man to give full weight, he permits a larger number of men, who would like to be honest, to continue to be honest. So, I look upon his work as having high value from a general moral standpoint, as well as an intrinsic and commercial value.

Dr. Fritz Reichmann, State Superintendent of Weights and Measures, will now speak to us.

WEIGHTS AND MEASURES

Fritz Reichmann

Some years ago a man in Kansas initiated a campaign of swatting the fly. This is a good thing, not so much because it kills so many flies, but because it is a healthful exercise for the swatter and because it has stimulated inventive genius and started factories for making various forms of flytraps and swatting instruments. It has been of no particular injury to the fly because several generations are developing while one fly is being killed. Just at present the chief amusement of those who have only a superficial appreciation of economic problems or business or who wish to appeal to the sensational seems to be to knock the middleman. The middleman is evidently not quite as patient as the fly.

Those who are knocking the middleman are not making very clear what they mean by the middleman, but the presumption is that it is he who acts as a distributor between the producer and the consumer. Unquestionably some abuses have existed and do exist in the matter of distribution of various kinds of commodities, not only food products, but the distributing agencies of farm products and food products seem to be the ones that are principally being knocked. Drygoods, hardware and millinery distributors will be next in line, then automobiles and airships.

There are among those who distribute supplies a certain percentage who will take advantage of any shortcomings in the matter of business intelligence on the part of the producer and on the part of the consumer, but the great majority of distributors, whether wholesale or retail, do not take such advantage and are not charging excessive prices for their labor; neither are they defrauding the producer or the consumer of their just due. It is absolutely impossible to bring the producer and the consumer together without some distributing agency and a distributing agency which is based purely upon sensation or sentiment and not upon impartial business must necessarily fail.

All sorts of schemes of public markets in various sections of a city, supported and operated by the city, have been proposed, started, and given up again. Our lives, especially in the larger cities, no longer fit these conditions. Various schemes have been suggested for neighborhood buying which in a small way does help, but also evidently fails for the very simple reason that it is contrary to human nature, in short, violates a natural law. It is impossible for six families to live in a star-shaped house, each family living at the points of the star, with a community kitchen in the center run on a cooperative plan. There would be war inside of a week. It can be done and is done in ordinary family hotels. As a specific instance of why such a plan should fail it is only necessary to cite the ordinary afternoon card club where there are two tables, eight members, and every year the ladies belonging to the card club change the membership because Mrs. Jones and Mrs. Smith do not agree on this thing or that. The disagreement is generally a very honest disagreement, and they very wisely agree to disagree and quietly and politely separate.

A short time ago the transportation companies were being roasted. Such roasting produced no result and the transportation companies are still doing business in the same old way. The roasting may have had some beneficial effect.

There is not much difference in the percentage of honesty among the producers, whether they be manufacturers or agriculturists, or among the distributors, whether they be wholesalers or retailers, or among the carrying companies, whether truck drivers, railroad or express companies. About the same percentage of lack of inherent honesty is also prevalent among the consumers.

I wish to emphasize the fact that the weights and measures from the instrumental side is relatively unimportant, compared to the matter of obtaining full quantity, which is what weights and measures really mean. The state of New York has taken the initiative in the work of regulating weights and measures and enforcing the weights and measures laws. Other states are following our methods and are copying our laws, which is well, so that we may have uniformity.

The producer needs a supervision of the weights and measures and the weight and measure of the quantities delivered, that the ultimate consumer may be enabled to buy with some degree of intelligence and assurance. The one important element of the cost of living is to have a basis of comparison, which can be obtained only when we know what quantity we pay for. The quality is of rather secondary importance, because as long as it is healthful there is no necessity for style or appearance, which two latter terms for ulterior motives are often used synonymously with quality, simply because the country has gone a little bit wild on the matter of quality. The question of quantity is a question of fact and very often where disagreements occur it is simply a case of negligence on the part of the two contracting parties. Such, for instance, is shown in the matter of beans which are sold by many of the farmers in New York State. If they would sell their beans only by the bushel and insist on a bushel they would immediately have the protection of the law and be required to give only sixty pounds; but, as a matter of fact, in a great many cases they are not protecting their own rights by so insisting.

That some element of negligence in buying and selling exists among the distributors, particularly among the retail food vendors, is evident from the fact that eighty per cent. fail, largely because they do not check the commodities they receive or know how much it costs them to do business. The consumer, in turn, does not check what he receives as he should. Several years ago when speaking to a woman's club, I asked them to try checking commodities they purchased as to quantity, and pay for only that which they received, provide themselves with a scale and some measures and I would be glad at any time to furnish them with blanks so that they could get reliable data as to what they were actually receiving. I have had no requests for such blanks. Several members of that same club were interviewed a short time ago and it was found that some of them had started checking supplies, but after a short time had put the scale on the top shelf of the pantry and are again using the same old methods. It does no good to inaugurate a system of checking if it is not kept up, but if it is kept up it becomes a matter of saving. The general manager of one of the largest industrial firms of the world a few weeks ago told me that every commodity received by that firm was checked, not only as to quantity but as to quality, and that the moral effect alone of such checking he estimated to be worth at least a million dollars.

The instrumental side of weights and measures is well in hand in this state. Gross errors due to instruments have been practically eliminated and the many prevalent small errors are rapidly being eliminated. From the standpoint of quantity, whether you are buying drygoods, hardware, meat products, millinery, feed, cereals or food products generally, when they are sold in package form, there is no statute requiring the seller of such commodities to state how much he is giving. That is one of the real causes of the high cost of living, because the price of most food products when purchased as they were ten, fifteen, twenty, twenty-five and thirty years ago, to-day includes unknown quantities of paper wrapping and tons of advertising matter in magazines.

We need a law that will compel the manufacturer to state within reasonable limits how much he is selling when he sells by the package. The Smith coal law, which has recently gone into effect, requires that bags of coal state on the outside how much they contain. The results of this have been remarkable. Without any increase in price the bags have been practically standardized and those who were inclined to make use of the visual defects of people in purchasing have increased the size of their bags to meet the size of the honest and legitimate vendors. Not until the legislature of the state of New York passes a businesslike statute requiring that vendors, whether producers or distributors, represent clearly how much they are giving, will the question of high prices on commodities be stilled. I say the legislature, because unless there is an unforseen defect in such a measure our Governor will certainly approve it, as he has approved all measures which are for the benefit of business and for the benefit of the consumer.

THE PRESIDENT: Now we will have the discussion.

The stenographer will not ask the names of the speakers, but simply note whether visitor or member.

A VISITOR: I should like to ask Mrs. Bangs if she purchases meat in the same way as the articles she mentioned.

MRS. BANGS: The families did not go into the meat proposition at all, because six families could not eat half a cow or sheep. It was only the butter, groceries, eggs, etc. But, with twelve families buying, they could buy on the same principle. It was only because we started with the number of six that we did not do it.

A MEMBER: The editor of one of our great agricultural papers, who was here to-day, told our committee that he was certain that ninety per cent. of the women of New York, about whom we were concerned, would not go to the market or carry a market basket, as our mothers did. I asked a woman of great experience and wisdom if that were true, and she said she thought it was a little high, but it was true in the main. I then found a publisher of one of our great New York dailies, a man of extraordinary shrewdness, who said, "Don't trouble yourself about this; this present situation has been largely caused by our women." If that is true, what are they going to do about it to rectify the mischief?

PROF. VAN RENSSELAER: Women have carried big bags on the streets and street cars, and it does not matter whether a crochet hook or a chicken's foot sticks out; it is just as honorable.

A VISITOR: Coming as a bride from the city of ideal markets, Washington, D. C., I brought a very neat little market basket with me. The first time I went to the corner grocery, the groceryman did not know what to do with my basket. I left it there three days, and finally had to send for it.

We have a market in Albany, and the first time I went to market I was told that a "lady" was never seen in the market at Albany, that I had "disgraced" myself, so I desisted from going to market. In recent days I have learned better; I think I have "come of age" this fall. So, this last year, I have been visiting the market in the vegetable and fruit seasons. Some days I save one dollar and twenty-five cents. I ask the prices at the stores, and then go to the market. In canning fruit, some years when purchasing large amounts, I have saved as much as two dollars and twenty-five cents a day on one purchase. I find it is a great advantage to go, although it is not considered "the thing" in Albany to do it. I am not ostracized, of course, but I find that I am usually the only one there.

It is rather hard to have things sent from six distributing points to one. I wonder if this organization could help the city of Albany and the civic organizations in Albany to give us an ideal market. This commission house that they suggested is an excellent idea, but I do wish that Albanians could appreciate what a Buffalo, Baltimore or Washington market is.

A VISITOR: I have often wondered what a housewife ought to pay for a good checking outfit. Can Dr. Reichmann tell us?

DR. REICHMANN: About two dollars. Then, when they bring the things, make them put them in a peck measure or put them on the scale. Do not check every purchase, but occasionally, instead of having them put in the dishpan, put them in that peck measure. That has the moral effect to which Commissioner Pearson referred.

A MEMBER: Can Miss Rose give us any idea of the best means to pursue to stimulate a large consumption of apples? How can we get a man to eat six apples a day? Many of us are apple growers.

PROF. ROSE: I think all you would have to do would be to get a woman to cook them six different ways, if necessary. I did not omit that point purposely. Certainly I think they rank with other fruit. There is no reason why we cannot eat apples when they are in season, or when we can keep them as you can, where you have storage room, instead of vegetables when they are high, or instead of other fruits when they are high. Compared with other fruits, they rank very well as to fuel value.

A MEMBER: You have them at eight dollars a barrel, and we who are selling them are glad to get two and three dollars.

PROF. ROSE: I am in New York City, where I and my students have to buy.

A MEMBER: We will sell apples at a cent apiece, or a little under, and Miss Rose has to pay two and a half cents for them. There is quite a big margin there.

THE PRESIDENT: Your president-elect, Mr. George W. Sisson, Jr., of Potsdam, will make an announcement regarding our meeting a year hence.

PRESIDENT-ELECT SISSON: It is a matter of great congratulation to the New York State Agricultural Society that our three-day conference has been closed with so unique, interesting and altogether appropriate a meeting as we have had this evening. I believe nothing like this has ever before been held in connection with a strictly agricultural movement. It just illustrates the intimate relations of our basic industry with all that makes up the home life of the nation, whether in the country or the city. I hope that future meetings of our association may take up these problems and see how they are interwoven, and attempt to untangle the skeins, where they are tangled, and work out these problems in some definite and practical way that will be of ultimate good, not only to the producers, but to the ultimate consumers of the cities.

It is with pleasure that I am able to announce that the Department of Education, through one of its principal officers, has stated that we might use their beautiful assembly room in the new Education Building across the way, another year, a room which will comfortably seat something like one thousand five hundred people, with committee rooms adjoining. We may, therefore, look forward to our meeting next year with every convenience, at the same time remembering and thanking the state authorities for the splendid accommodations we have had here.

I trust that we may have, next year, as interesting and important topics, and as good a gathering of the farmers of the state as we have had this time.

THE PRESIDENT: On behalf of the State Agricultural Society and the affiliated organizations, I sincerely thank the speakers of the evening for their splendid help.

A motion that we adjourn would be in order.

On motion, the Seventy-Second Annual Meeting of the New York State Agricultural Society adjourned, *sine die.*

SECRETARY'S REPORT

The minutes and proceedings of the seventy-first annual meeting of the New York State Agricultural Society, January 17, 18 and 19, 1911, having been published in full by the Department of Agriculture, as Bulletin 23, it will not be necessary for me to make a detailed report. Copy of the proceedings have been mailed to all members of the society, and, as far as possible, to those interested, who have made requests for the same.

During the past year your secretary has endeavored to take care of the correspondence and inquiries, which, immediately after the annual meeting and also previous to it, were numerous.

During the year I have made an extensive revision of the life membership, but there are some members from whom we are unable to hear. I would be glad to have any member present at this meeting notify me, if in looking over the list, which is published on pages 457-466 of Bulletin 23, he finds any incorrect address, or the name of a member that is dead. Also if any member has changed his address, it is important that he notify the secretary.

Having served as your secretary for the past seven years, I now beg to announce that I am unable to continue to hold this office and would ask the members to release me from my duties and not consider my name for re-election. I have endeavored to fill my position to the best of my ability and can assure you that as a life member my interest will always be with the society and I will do all in my power to further its cause. I wish to thank all the members for the confidence which they placed in me in electing me year after year to this office, and I heartily regret that, owing to business reasons, I am forced to relinquish it.

TREASURER'S REPORT

RECEIPTS

Balance as per last report	$225 94	
Fifty-one dinner tickets	102 00	
Dues, thirty annual members	30 00	
Dues, five life members	50 00	
Balance dues changed from annual to life membership	9 00	
Total receipts		$416 94

DISBURSEMENTS

The Ten Eyck, annual dinner	$108 00	
William B. Jones, fees	7 00	
W. M. Bates, services	12 00	
Christopher Degenaar, services	3 00	
Chester Smith, services	1 00	
Frank Deevey, services	1 00	
Louis Bassin, services	1 00	
Gilbert M. Tucker, expenses, speaker	5 85	
Hudson Valley Paper Co., envelopes	3 50	
Brandow Printing Co.:		
Applications	2 25	
Envelopes, printed	2 65	
Letterheads	6 00	
Envelopes, printed	2 25	
Programs	17 25	
Dinner tickets	2 00	
Membership cards	2 00	
Invitations	5 00	
E. H. Chapman, postage	10 00	
Van Benschoten & Countryman, advertising	25 00	
Total disbursements		$216 75
Balance on hand January 15, 1912		$200 19

LIFE MEMBERS

A

Abell, Flavel A., Fayetteville.
Acker, Milo M., Hornell.
Adee, Philip H., 45 Pine St., New York.
Akin, Elwood S., Auburn, R. D.
Aldridge, A. E., 118 W. Railroad St., Syracuse.
Alexander, W. A., Union Springs.
Allen, E. M., 319 So. Crouse St., Syracuse.
Allen, Gordon W., Auburn.
Allen, I. W., East Syracuse.
Allen, William J., Heuvelton.
Allis, Clark, Medina.
Amos, Jacob, Syracuse.
Andrews, Charles D., Camillus, R. D. 1.
Andrews, Frank H., 23 Main St., Johnstown.
Andrews, J. M., 716 James St., Syracuse.
Andrews, T. E., Camillus.
Andrews, W. R., 1818 W. Genesee St., Syracuse.
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Averill, Charles S., The Yates, Syracuse.

B

Babcock, Hiram W., Auburn, R. D. 1.
Babcock, Silas B., Camillus, R. D. 1.
Backus, Rufus N., Palmyra.
Bailey, L. H., Ithaca.
Bain, Alonzo, Kennedy.
Baker, Aug. D., 24 Fulton St., Auburn.
Baker, Fisher A., Yonkers.
Baker, Hiram, Cicero.
Baker, Hiram W., East Syracuse, R. D.
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Baker, John H., Auburn, R. D. 1.
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Barnum, W. S., Syracuse.
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Barrus, E. R., Clay.
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Benham, E. M., Canandaigua, R. D.
Benham, Murray, Stanley.
Bennett, J. M., Weedsport.
Bennett, James O., Camillus, R. D. 3.
Best, William L., Ogdensburg.
Betts, Samuel R., 416 James St., Syracuse.
Betts, S. T., 332 So. Salina St., Syracuse.
Bibbins, J. W., Weedsport.
Bicknell, J. Y., Buffalo.
Bidleman, Charles, Albion.
Bigelow, Otis M., Baldwinsville.
Bill, James R., Ogdensburg.
Billington, B. H., Bastable Block, Syracuse.
Birge, James C., Ogdensburg.
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Breed, Eugene, Memphis.
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Brewster, S. Edward, Rochester.
Bridge, S. D., Ogdensburg.
Briggs, E. W., Medina.
Brill, G. D., Bedford Station.
Brisbin, C. E., Schuylerville.
Britton, Israel E., 186 E. Brighton Ave., Syracuse.
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Brower, F. C., 317 E. Genesee St., Syracuse.
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C

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Campbell, David, Syracuse.
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Campbell, John S., New York Mills.
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Chandler, Harvey G., Ogdensburg.
Chandler, Webster L., Ogdensburg.
Chapman, Crocker, Hoosick Falls.
Chapman, C. Everett, Freeville.
Chapman, E. H., Albany.
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Chase, Col. A. C., Syracuse.
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Cheney, Walter W., Manlius.
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Converse, George H., Woodville.
Converse, James F., Woodville.
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Cook, Herbert J., South Granby.
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Cox, William B., Plainville.
Cramer, Olen, Baldwinsville.
Crandall, William De Loss, West Edmeston.
Crawford, A. H., Liverpool.
Crossman, C. W., Rochester.
Crossman, H. D., Weedsport.
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Curtis, John P., Syracuse.

D

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Daniels, William H., Ogdensburg.
Darrow, M. C., Solvay.
Davies, William H., Ogdensburg.
Davis, Boothe C., Alfred.
Davis, Nelson S., Syracuse, R. D. 1.
Davison, G. Howard, Millbrook.
Dawley, F. E., Fayetteville.
Decker, Peter L., Bradford, Pa.
Dederick, Peter K., 1 Lodge St., Albany.
DeGraff, Alfred, Fonda.
Denniston, Augustus, Washingtonville.
Deuel, Stephen T., Millbrook.
Dewey, C. D., Batavia.
DeWitt, Abram V., Albany.
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Dolbear, Martin E., Fulton.
Donnelly, P. H., Cazenovia.
Doolittle, L. F., Ouaquaga.
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Downs, Arthur L., Mattituck.
Doyle, Gregory, M.D., LL.D., Syracuse.
Duffy, Hugh, Cortland.
Dunn, Jr., John, 401 Comstock Ave., Syracuse.
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Dunning, W. D., 329 W. Water St., Syracuse.
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Dutcher, John B., Pawling.
Dutcher, J. Gerow, Pawling.
Dyer, Marshall R., Manhattan Hotel, Syracuse.

E

Earle, C. P., Gouverneur.
Earll, J. Horatio, Skaneateles.
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Ebeling, F. H., Syracuse.
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Ellis, Earl E., Camillus.
Ellis, James, 205 Leavenworth Ave., Syracuse.
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Fenner, Seth, East Aurora.
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Fisher, Conrad J., Minoa.
Fisher, John C., Madrid.
Fisk, Charles H., 317 Bear St., Syracuse.
Fitzgerald, Lawrence J., Auburn.
Flood, Thomas S., Elmira.
Flynn, G. D., Union Springs.
Forey, John H., 133 Wood Ave., Syracuse.

Forrester, W. E., Hammond.
Forsyth, James, Owego.
Foster, Isaac H., Baldwinsville.
Foster, Nat. W., Westport, Conn.
Fowler, William C., 705 South St., Peekskill.
Fox, P. W., Canton.
Foxton, H. C., Syracuse, R. D. 4.
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Frazer, Fred, 603 James St., Syracuse.
Freeman, George, 428 E. Genesee St., Syracuse.
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Fugett, J. M., Waterloo.
Fullerton, H. B., Medford, L. I.
Fullerton, Mrs. H. B., Medford, L. I.

G

Gallup, Wayne, 1109 Monroe Ave., Rochester.
Gardiner, E. V. R., Middletown.
Gardner, Arthur L., Riverdale, Md.
Gates, A. R., Belgium.
Gates, F. H., Chittenango.
Gates, J. W., Chittenango.
Gere, Irving N., 535 Oak St., Syracuse.
Gere, William A., 1407 Milton Ave., Solvay.
Gibbale, Isidore H., Medina.
Gibbs, C. M., 320 W. Fayette St., Syracuse.
Gibbs, Jr., C. M., 320 W. Fayette St., Syracuse.
Gibson, Richard, Delaware, Ontario.
Giddings, F. N., Baldwinsville.
Gilbert, J. M., 905 Walnut Ave., Syracuse.
Gillete, E. C., Penn Yan.
Gillett, Harris, Unadilla.
Gore, W. E., Richville.
Gorham, Emmett, Elbridge.
Gorham, William B., Camillus.
Gould, James F., Warner.
Grace, Thomas J., 863 Emerson Ave., Syracuse.
Grassman, Jacob, Syracuse.
Gray, William H., Syracuse.
Green, Charles A., 25 Higland Ave., Rochester.
Green, J. F., Waterford.
Green, Willis H., Belleville.
Gregory, George Frederick, Dummerston, Vt.
Groesbeck, E. A., 313 State St., Albany.

H

Haberle, Charles, 608 James St., Syracuse.
Haberle, William H., 516 James St., Syracuse.
Hadden, J. B., Pulteney.
Hall, F. G., Dansville.
Hall, George, Ogdensburg.
Hall, John B., Canandaigua.
Hallock, J. H., Saranac Lake.
Hallock, William, Albion.
Hamilton, Levi T., Weedsport.
Hamilton, William, Caledonia.
Hamilton, William, Deansboro.
Hanchett, Charles G., 211 W. Fayette St., Syracuse.
Hand, Henry M., Lyndonville.
Harberle, Frank B., Syracuse.
Hardy, Don P., Union Springs.
Hardy, Elias, 7 Howard St., Auburn.
Harmon, A. B., Weedsport.
Harmon, John S., Box 1024, Ashtabula, Ohio.
Hartshorne, George, Rahway, N. J.
Hasbrouck, Lewis, Ogdensburg.
Hathway, J. R., Homer.
Havens, Charles H., Penn Yan, R. D. 7.
Haviland, Mrs. William G., Johnsonville.
Hawkins, E. T., 302 Summit Ave., Syracuse.
Hawley, Mrs. Estelle F., Pittsford.
Hawley, Frank W., Pittsford.
Hawley, George W., Warner.
Hay, M. L., Camillus, R. D.
Hayden, L. C., 1002 W. Genesee St., Syracuse.
Hayden, William, McDonough.
Hayhoe, James H., 1861 W. Fayette St., Syracuse.
Hendricks, Francis, Syracuse.
Hier, John P., Syracuse.
Higgins, Alfred, Syracuse.
Hill, Albert J., Medina.
Hill, D. Munro, Elbridge.
Hilton, James, New Scotland.
Hinkley, David J., Sangerfield.
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STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 36

State Institution Farms

BY

HARRY B. WINTERS

First Assistant Commissioner of Agriculture

STATE INSTITUTION FARMS

Section 12 of the Agricultural Law, enacted by the Legislature of 1910, provides that the Commissioner of Agriculture shall make inquiry into methods of farming in connection with the various State institutions reporting to the Fiscal Supervisor of State Charities, the State Hospital Commission, and the Superintendent of State Prisons. This amendment was proposed by the heads of the departments having jurisdiction over the farms. It requires that the Commissioner of Agriculture shall make recommendations to the chief officers of those departments.

The purpose of this amendment was mainly to assist in making the farms more productive and more profitable. A second purpose, however, was to provide demonstrations of successful farming practice for the benefit of the respective communities where they are located. Some of the farms in the past have made most creditable records and now furnish examples of good agricultural work that may well be emulated. These farms are widely scattered over the entire State, thus making them available for use as object lessons of practical farming to all who may be interested. Benefit will come to these farms from having the undivided attention of an expert who is able to find special remedies when important special problems are presented and who himself can give valuable advice and suggestions from his own training and experience, and can carry from one institution to another information as to methods that are found to be valuable under peculiar conditions surrounding this work.

These institutions usually have an abundance of available labor which it is desirable to keep employed. Their problems, therefore, are somewhat different from those on a farm conducted as a business, with paid help.

The Department of Agriculture not only assists by giving advice as to better methods in producing crops, but also advises as to best crops to produce. In some instances, for example, it has been found that milk is being purchased at prices above those for which it can be produced on the premises, and in such cases the establishment of a dairy or its enlargement is proposed.

In the purchase of agricultural supplies also it has been possible to give valuable help. For example, some institutions have found it necessary to purchase large quantities of potatoes. This Department has brought these institutions into direct contact with farmers having potatoes to sell. Purchases are made without the intervention and profit of middlemen, to the financial advantage of both the institution and the farmers. An extension of the system of making purchases in this way naturally suggests itself.

All requests for inspections for special purposes have been cared for by the Department, including the purchase of additional land, new equipment and items carrying large appropriations. Experts have been consulted on special problems in connection with the institution farms, such as poultry, fruit, hog cholera, sand lands, and milking machines. Drainage maps have been prepared for several farms.

The size of a farm and the number of acres per capita of population best adapted to the requirements of an institution is an important question which is receiving careful consideration.

STATE INSTITUTION FARM ACREAGE PER CAPITA

	TOTAL ACREAGE	TOTAL POPULATION	ACRES PER CAPITA
19 Charitable Institution Farms	8,954	*11,637	.769
14 State Hospital Farms	8,415	*35,723	.235
7 State Prison Farms (including proposed sites)	2,951	6,147	.48

* Including employees.

STATE CHARITY, HOSPITAL AND PRISON FARMS

INSTITUTION	LOCATION	AVERAGE DAILY POPULATION	TOTAL ACREAGE
Charitable Institutions			
Western House of Refuge for Women...	Albion...........	264	92.5
State School for the Blind............	Batavia..........	151	60.5
State Soldiers' and Sailors' Home......	Bath.............	2,183	375.5
State Reformatory for Women.........	Bedford..........	381	107.5
State Reformatory...................	Elmira...........	1,394	411
State Training School for Girls.......	Hudson..........	406	86.5
State Agricultural and Industrial School.	Industry.........	758	1,432.5
Thomas Indian School...............	Iroquois..........	179	125
Eastern New York Reformatory........	Napanoch........	471	272
Custodial Asylum for Feeble-Minded Women..........................	Newark..........	895	47
Women's Relief Corps Home..........	Oxford...........	224	103.5
New York House of Refuge...........	Randall's Island...	612	37.5
State Hospital for Incipient Tuberculosis	Ray Brook........	212	516
Rome State Custodial Asylum.........	Rome............	1,246	543.5
Craig Colony for Epileptics...........	Sonyea..........	1,542	1,895
Institution for Feeble-Minded Children.	Syracuse.........	650	274
Letchworth Village..................	Thiells...........	....	2,035.5
Hospital for Care of Crippled and Deformed Children..................	West Haverstraw..	69	48.5
State Training School for Boys.........	Yorktown........	....	490.5
		11,637	8,954
Hospitals			
Binghamton State Hospital...........	Binghamton......	1,711	1,113
Long Island State Hospital...........	Brooklyn.........	2,882	25
Buffalo State Hospital...............	Buffalo..........	3,574	183
Central Islip State Hospital..........	Central Islip......	2,192	1,000
Gowanda State Homeopathic Hospital..	Gowanda.........	2,301	500
Kings Park State Hospital............	Kings Park.......	2,767	834
Middletown State Homeopathic Hospital	Middletown......	2,333	280
St. Lawrence State Hospital..........	Ogdensburg.......	1,691	1,026
Hudson River State Hospital..........	Poughkeepsie.....	1,291	812
Rochester State Hospital.............	Rochester........	3,854	217
Utica State Hospital.................	Utica............	918	412
Manhattan State Hospital............	Ward's Island.....	5,374	245
Willard State Hospital...............	Willard..........	4,813	1,204
Mohansic State Hospital.............	Yorktown........	22	564
		35,723	8,415
Prisons			
State Prison for Men (and Prison for Women)........................	Auburn..........	1,528	3.5
Great Meadow Prison...............	Comstock........	....	912
Clinton Prison (Dannemora State Hospital)...........................	Dannemora.......	1,830	625
Matteawan State Hospital............	Matteawan.......	939	483
Sing Sing Prison....................	Ossining.........	1,850	9.5
State Farm for Women..............	Valatie...........	....	300
Wingdale Prison....................	Wingdale.........	....	618
		6,147	2,951
TOTAL FOR ALL INSTITUTIONS......	....	53,507	20,320

The first object of these farms is to produce food for their people. One of the questions that might be asked is, Do they pay? The figures below are taken from the farm census reports, as far as available, for all institutions for the year ending September 30, 1910. The results show that twenty-eight farms are making a profit of $203,093; two are suffering a loss of $267; and taken as a whole they are making a profit of $202,826.

It is interesting to note the following:

Total farm investment	$2,152,453
Total profits	202,826
Interest on investment at 5 per cent	107,622
Profits with 5 per cent. interest deducted	93,332
Rate of profit made by all farms as a total	9.4 per cent.
Highest rate of profit, made by Rome	23.2 per cent.
Greatest rate of loss, made by Batavia	2.4 per cent.

PROFITS AND LOSSES OF STATE INSTITUTION FARMS

Sonyea		$30,808
Industry		30,711
Binghamton		20,854
Willard		18,578
Rome		16,368
Utica		14,614
Gowanda		11,311
Ogdensburg		10,462
Ward's Island		9,360
Syracuse		6,022
Hudson River		5,827
Bath		5,506
Buffalo		4,947
Middletown		4,073
Iroquois		2,707
Elmira		2,645
Central Islip		2,508
Long Island		1,069
Napanoch		1,033
Hudson		963
Rochester		813
Oxford		676
Kings Park		486
Newark		404
Randall's Island		162
West Haverstraw		80
Bedford		64
Ray Brook		42
Total Profits		$203,093
Albion	(Loss) $21	
Batavia	(Loss) 246	
Total Losses		267
NET PROFIT		$202,826

RATE OF PROFIT ON FARM INVESTMENT

INSTITUTION	INVEST-MENT	TOTAL PROFIT	INTEREST, 5 PER CENT	NET PROFIT	RATE OF PROFIT, PER CENT
		Charitable Institutions			
Albion	$14,239	*$21	$712	*$733	*0.1
Batavia	10,056	*246	503	*749	*2.4
Bath	33,042	5,506	1,652	3,854	16.6
Bedford	7,990	64	399	*335	0.8
Elmira	24,602	2,645	1,230	1,415	10.7
Hudson	11,566	963	578	385	8.3
Industry	370,056	30,711	18,503	12,208	8.2
Iroquois	25,241	2,707	1,262	1,445	10.7
Napanoch	21,385	1,033	1,069	*36	4.8
Newark	8,063	404	403	1	5.0
Oxford	17,090	676	854	*178	3.9
Randall's Island	2,735	162	137	25	5.9
Ray Brook	11,009	42	555	*513	0.3
Rome	70,411	16,368	3,521	12,847	23.2
Sonyea	150,468	30,808	7,523	23,285	20.4
Syracuse	48,947	6,022	2,447	3,575	12.3
Thiells	....	....	....	....	....
West Haverstraw	5,730	80	287	*207	1.3
Yorktown	....	....	....	....	....
	$832,630	$97,924	$41,635	$56,289	11.7
		Hospitals			
Binghamton	$113,881	$20,854	$5,694	$15,160	18.3
Brooklyn	11,039	1,069	552	517	9.6
Buffalo	134,947	†4,947	6,747	*3,672	3.6
Central Islip	51,325	2,508	2,565	*57	4.8
Gowanda	77,182	11,311	3,859	7,452	14.6
Kings Park	125,185	486	6,259	*5,773	0.3
Middletown	49,902	4,073	2,495	1,578	8.1
Ogdensburg	183,751	10,462	9,187	1,275	5.6
Poughkeepsie	159,046	5,827	7,952	*2,125	3.6
Rochester	51,195	813	2,559	*1,746	1.5
Utica	102,935	14,614	5,147	9,467	14.1
Ward's Island	83,809	9,360	4,190	5,170	11.1
Willard	175,626	18,578	8,781	9,797	10.5
Yorktown	....	....	....	....	....
	$1,319,823	$104,902	$65,987	$37,043	7.9
TOTAL	$2,152,453	$202,826	$107,622	$93,332	9.4

* Loss. † As reported.

Good gardens and fresh vegetables are appreciated by most institutions. A uniform schedule of prices for home products of all State institution farms has been made, thereby placing them as far as possible on the same basis. A system of weighing vegetables instead of counting or measuring them has been adopted to save time. The gardens furnish better fresh vegetables than can be bought, and at less cost. A profitable garden must be planted in season, cultivated thoroughly and supplied with an abundance of humus and fertilizer. Generally speaking, the per cent. ot profit will follow the degree of fertility very closely.

It is interesting to note that at the Manhattan State Hospital, at Ward's Island, for the year ending September 30, 1910, garden products amounted to $17,299; the profit was $9,360 and the profit after deducting 5 per cent. on the investment of $83,809 was $5,170. All this from 65 acres of land. On an investment at the rate of $1,289 per acre, this garden shows a profit at the rate of 11.1 per cent. The following fertilizers were purchased: 2,499 tons of manure, $2,691.65; commercial fertilizer, $91.13; lime, $122.75; a total of $2,905.53. This shows that it is profitable to buy large quantities of manure, fertilizer, etc., for a good garden.

VALUE OF GARDEN PRODUCTS RAISED AT STATE INSTITUTIONS, 1909–10

Charitable Institutions

Albion	$506 83
Batavia	500 77
Bath	5,477 99
Bedford	514 45
Elmira	1,258 98
Hudson	912 88
Industry	8,580 81
Iroquois	528 84
Napanoch	858 67
Newark	1,355 36
Oxford	389 87
Randall's Island	695 52
Ray Brook	153 60
Rome	3,952 33
Sonyea	16,341 04
Syracuse	2,023 07
Thiells	....
West Haverstraw	169 46
Yorktown	....
	$44,220 47

State Hospitals

Binghamton	$6,166 64
Brooklyn	2,315 08
Buffalo	1,583 37
Central Islip	5,710 74
Gowanda	7,009 02
Kings Park	579 25
Middletown	5,644 86
Ogdensburg	3,985 85
Poughkeepsie	10,592 14
Rochester	3,606 95
Utica	11,764 11
Ward's Island	17,298 69
Willard	4,957 88
Yorktown	....
	$81,214 58

Prisons

Auburn	$831 70
Comstock	....
Dannemora	357 20
Matteawan	5,922 18
Ossining	....
Valatie	....
Wingdale	....
	$7,111 08
TOTAL	$132,546 13

The value of pork produced by kitchen waste varies at different institutions from a loss of 45 cents to a profit of $2.78 a year per capita of population. It should be noticed, using average results, that six institutions are losing $8,866.99 a year by not keeping swine. The local board of health regulations often forbid the keeping of swine within certain territory. We believe, however, that the time has come when sanitary houses can be built and kitchen waste fed to swine in a manner that is perfectly safe and agreeable to the neighborhood. This is especially true when the institution has a garden where the manure can be used in an inoffensive manner.

This matter is being watched carefully. Kitchen refuse is cleaner and fed fresher than ever before. Steps have been taken to stop the ravages of hog cholera. The Department believes that the great losses this disease has caused in the past can now be to a great extent prevented if notice is given quickly and hog cholera serum used at once.

PORK PRODUCTION OF THE STATE CHARITABLE AND HOSPITAL FARMS FOR THE YEAR ENDING SEPTEMBER 30, 1910

INSTITUTION	AVERAGE DAILY POPULATION	TOTAL VALUE PORK PRODUCT	COST OF FEED NOT GARBAGE	VALUE OF PORK PRODUCED BY GARBAGE	VALUE PER CAPITA OF PORK PRODUCED BY GARBAGE	LOSS BY NOT KEEPING SWINE
			Charitable Institutions			
Albion	264	$210 81	$68 70	$142 11	$0 54	....
Batavia	151	....	....	....	....	$172 26
Bath	2,183	3,036 36	796 00	2,240 36	1 03	....
Bedford	381	156 60	....	156 60	41	....
Elmira	1,394	2,766 08	53 85	2,712 22	1 95	....
Hudson	406	796 38	268 86	527 52	1 30	....
Industry	758	3,984 08	2,084 80	1,899 28	2 51	....
Iroquois	179	568 27	259 70	308 57	1 72	....
Napanoch	471	792 00	325 50	466 50	99	....
Newark	895	1,021 56	20 25	1,001 31	1 12	....
Oxford	224	1,136 26	513 05	623 21	2 78	....
Randall's Island	612	....	....	....	....	878 70
Ray Brook	212	....	....	....	....	274 92
Rome	1,246	3,480 12	2,406 62	1,073 50	86	....
Sonyea	1,542	5,108 31	1,314 49	3,793 82	2 46	....
Syracuse	650	957 44	222 00	735 44	1 13	....
W. Haverstraw*	69	....	....	....	....	....
Total	11,637	$24,014 27	$8,333 82	$15,680 44	....	$1,325 88
Average	......	....	....	....	$1 35	....
			Hospitals			
Utica	1,711	$1,888 61	†$539 50	$1,349 11	$0 79	....
Willard	2,882	2,049 85	973 96	1,075 89	37	....
Hudson River	3,574	....	....	....	....	$2,689 90
Middletown	2,192	4,448 93	†63 67	4,385 26	2 00	....
Buffalo	2,301	2,471 50	74 73	2,396 77	1 04	....
Binghamton	2,767	1,853 62	....	1,853 62	67	....
St. Lawrence	2,333	2,527 84	696 18	1,831 66	78	....
Rochester	1,691	2,536 35	20 00	2,516 35	1 49	....
Gowanda	1,291	1,281 88	1,866 90	¶585 02	¶45	....
Kings Park	3,854	2,829 60	....	2,829 60	73	....
Long Island	918	....	....	....	....	683 41
Manhattan	5,374	....	....	....	....	4,167 80
Central Islip	4,813	2,121 83	....	2,121 83	44	....
Mohansic	22	....	....	....	....	....
Total	35,723	$24,010 01	$4,234 94	$19,775 07	....	$7,541 11
Average	......	....	....	....	$0 55	....
GENERAL AVERAGE	......	....	....	....	0 75	....

* Not reported. † Includes poultry. ¶ Loss.

Charitable institutions credited dressed pork at 12 cents per lb.; hospitals, at 7½ cents per lb.

MILK NEEDED AT INSTITUTIONS

INSTITUTION	AVERAGE DAILY POPULATION	QUARTS CONSUMED DAILY PER CAPITA	TOTAL QUARTS CONSUMED YEARLY	COWS NECESSARY TO PRODUCE MILK CONSUMED
	Charitable Institutions			
Albion	264	.49	47,450	13
Batavia	151	.51	29,004	8
Bath	2,183	.23	187,144	52
Bedford	381	.34	47,606	14
Elmira	1,394	.10	53,761	15
Hudson	406	.61	90,807	25
Industry	758	1.00	277,152	*76
Iroquois	179	.83	54,665	*15
Napanoch	471	.11	20,216	6
Newark	895	.36	117,716	33
Oxford	224	.45	36,913	11
Randall's Island	612	.62	139,570	39
Ray Brook	212	2.07	160,810	44
Rome	1,246	.54	245,610	*68
Sonyea	1,542	.41	235,464	65
Syracuse	650	.69	164,144	45
Thiells	....	....	....	....
West Haverstraw	69	.89	22,570	7
	11,637	....	1,930,602	536
	Hospitals			
Binghamton	2,767	.56	562,656	155
Brooklyn	918	.57	190,926	53
Buffalo	2,301	.56	468,264	129
Central Islip	4,813	.42	745,775	205
Gowanda	1,291	.58	274,957	76
Kings Park	3,854	.40	561,386	154
Middletown	2,192	.53	423,482	116
Ogdensburg	2,333	.57	490,290	135
Poughkeepsie	3,574	.50	654,526	180
Rochester	1,691	.60	371,697	102
Utica	1,711	.48	300,843	83
Ward's Island	5,374	.36	697,753	192
Willard	2,882	.50	530,113	146
Yorktown	22	....	....	....
	35,723	....	6,272,668	1,729
	Prisons			
Auburn	1,528	....	....	....
Comstock	....	....	1,000	1
Dannemora	1,830	....	....	....
Matteawan	939	.40	138,471	38
Ossining	1,850	.03	23,252	7
Valatie	....	....	....	....
Wingdale	....	....	....	....
	6,147	....	162,723	46
TOTAL	53,507	....	8,365,993	2,308

* Making butter.

With very few exceptions this milk could be produced by the institutions to good advantage. Milk is now being credited to the farms at about the price it would cost to buy the same. This price varies in different localities. It is more difficult to produce milk in some sections than it is in others. This allowance is fair because it gives the farmer a chance to make a profit, if he produces milk. As a rule our institution farms are not stocked heavily enough with cattle to realize the greatest profit.

Not only should the institutions which have land enough produce their own milk, but in many instances butter can be made at a profit. It is interesting to note that at Rome, where they are making a profit of 23.2 per cent. on their farm investment, they are now making butter from their surplus milk. Skim milk may often be made into Dutch cheese, buttermilk, or pure culture sour milk, and used as a food to excellent advantage. The production of milk on institution farms should be increased rapidly. For the first few years it would be far better to spend for cattle feed a large percentage of the money now used in buying milk. Better milk than we are buying can be produced at a cost lower than that which we are paying.

VALUE AND AMOUNT OF MILK PRODUCED AND PURCHASED

INSTITUTION	TOTAL QUARTS MILK PRODUCED	TOTAL VALUE MILK PRODUCED	TOTAL QUARTS MILK PURCHASED	TOTAL COST MILK PURCHASED
	Charitable Institutions			
Albion	....	....	47,450	$1,898
Batavia	....	....	29,004	1,450
Bath	92,708	$3,940	94,436	3,765
Bedford	....	....	47,606	2,142
Elmira	53,761	2,285	....	....
Hudson	....	....	90,807	4,347
Industry	277,152	11,779	....	....
Iroquois	54,665	2,324	....	....
Napanoch	....	....	20,216	891
Newark	....	....	117,716	4,414
Oxford	27,651	1,175	9,262	370
Randall's Island	....	....	139,570	6,477
Ray Brook	....	....	160,810	11,205
Rome	245,610	10,439	....	....
Sonyea	212,864	9,047	22,600	1,113
Syracuse	164,144	6,976	....	....
Thiells	....	....	....	....
West Haverstraw	....	....	22,570	1,182
	1,128,555	$47,965	802,047	$39,254
	Hospitals			
Binghamton	338,266	$14,377	224,390	$7,135
Brooklyn	707	34	116,768	5,603
Brooklyn	....	....	*20,986	*4,134
Buffalo	....	....	468,264	18,436
Central Islip	43,987	2,508	13,240	754
Central Islip	....	....	*196,728	*37,457
Gowanda	274,957	11,686	....	....
Kings Park	44,469	2,535	203,496	11,255
Kings Park	....	....	*89,549	*18,232
Middletown	23,062	1,015	400,420	17,618
Ogdensburg	446,904	18,994	43,386	1,673
Poughkeepsie	156,062	6,836	498,464	21,832
Rochester	6,220	280	365,477	15,533
Utica	300,843	12,786	....	....
Ward's Island	55,518	2,610	134,875	6,339
Ward's Island	....	....	*144,960	*22,650
Willard	530,113	22,530	....	....
	2,221,108	$96,191	2,921,003	$188,651
	Prisons			
Comstock	....	....	1,000	†$44
Matteawan	131,191	$5,576	*2,080	*†396
Ossining	....	....	23,252	†1,019
	131,191	$5,576	26,332	$1,459
TOTAL	3,480,854	$149,732	3,295,079 *454,303	$146,095 *82,869

* Condensed Milk. † Estimated.

It will be seen that ten institutions are purchasing all of their milk and that eleven more are buying a part of their supply. Only ten farms are producing all the milk used. The value of milk purchased is $228,964 and the value of milk produced is $149,732. The freight on milk purchased is about $25,949 a year. Surely the dealer's profit and cost of handling would be as much more, or $51,898 above what the farmer receives on this one item alone.

To-day the dairy farmer, who knows his business and does it, is producing his goods at a profit. This fact is also borne out by the results on many of our own institution farms. These figures help to show some of the opportunities ahead of us. The production of milk on our farms will increase the fertility of our soil rapidly and make it more profitable.

Where it is necessary to store manure, the importance of packing the same solidly so as to exclude air and stop heating has been pointed out. Great care must be taken that all of the liquids are held by the solid matter Some concrete manure basins have been built. Special attention has been drawn to the advantages of spreading manure daily on sod ground, preferably on new seeding, thereby greatly increasing the yield of this important leguminous crop.

POTATOES REQUIRED AT INSTITUTIONS

	POPULATION	BUSHELS NEEDED YEARLY AT 3.8 PER CAPITA	ACRES NEEDED AT 150 BU. PER ACRE
Charitable Institutions			
Albion	264	1,003	7
Batavia	151	574	4
Bath	2,183	8,295	55
Bedford	381	1,448	10
Elmira	1,394	5,297	35
Hudson	406	1,543	10
Industry	758	2,880	19
Iroquois	179	680	5
Napanoch	471	1,790	12
Newark	895	3,401	23
Oxford	224	851	6
Randall's Island	612	2,326	16
Ray Brook	212	806	5
Rome	1,246	4,735	31
Sonyea	1,542	5,860	39
Syracuse	650	2,470	16
Thiells	....	....	....
West Haverstraw	69	262	2
	11,637	44,221	295
Hospitals			
Binghamton	2,767	10,511	70
Brooklyn	918	3,488	23
Buffalo	2,301	8,744	58
Central Islip	4,813	18,289	122
Gowanda	1,291	4,906	33
Kings Park	3,854	14,645	98
Middletown	2,192	8,330	56
Ogdensburg	2,333	8,865	59
Poughkeepsie	3,574	13,581	91
Rochester	1,691	6,426	43
Utica	1,711	6,502	43
Ward's Island	5,374	20,421	136
Willard	2,882	10,952	73
Yorktown	22	84	1
	35,723	135,744	906
Prisons			
Auburn	1,528	5,806	39
Comstock	....	....	....
Dannemora	1,830	6,954	46
Matteawan	939	3,568	24
Ossining	1,850	7,030	47
Valatie	....	....	....
Wingdale	....	....	....
	6,147	23,358	156
TOTAL	53,507	203,323	1,357

At 3.8 bushels per capita, 203,323 bushels are required each year for food. About 20,355 bushels more would be needed for seed. At 150 bushels per acre it would take 1,491 acres to grow the necessary potatoes.

Where there is land enough for the gardens, also enough to grow corn to feed cattle and to raise potatoes for the institution in the first year of a three-year rotation, the growing of potatoes is an excellent thing. Especial attention should be given to growing potatoes early, to avoid buying them when prices are high. The yield has been estimated at 150 bushels per acre. This should be increased at the rate of 10 bushels per year for the first few years. Where it is possible, our gardens should be a part of a three-year rotation, so that a leguminous sod can be plowed under.

Large savings have been made in the purchase of feed, not only in price, but by selection of feeds that furnish the greatest food value at least cost.

Assistance has been rendered in the purchase of farm machinery and in the planning of farm buildings. Our machinery should be purchased with judgment and our farm buildings planned for utility, so that neighboring farmers can get from them information to guide them in their work along similar lines.

Where it has been necessary to buy hay, potatoes and farm produce, an effort has been made to purchase these products direct from the producers.

The ideal institution farm must grow its own vegetables and fruit, canning enough for winter use; raise its own pork; make its own sausage and smoke its ham and bacon; produce its milk, butter, eggs, poultry, veal and a large part of its beef. This home production will not only furnish fresher and better food, but will save large amounts of money in freight, cost of handling and dealers' profits. Institution farms should be large enough to use improved machinery and properly rotate crops so as to add fertility to the soil and unlock fertility that is already in the land. These farms will then become more fertile year after year, and, therefore, more profitable.

SHEEP HELP TO BEAUTIFY THE FARM.

Used through the courtesy of the Breeder's Gazette.

STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 37

Addresses

AT

Farmers' Institutes

1911-12

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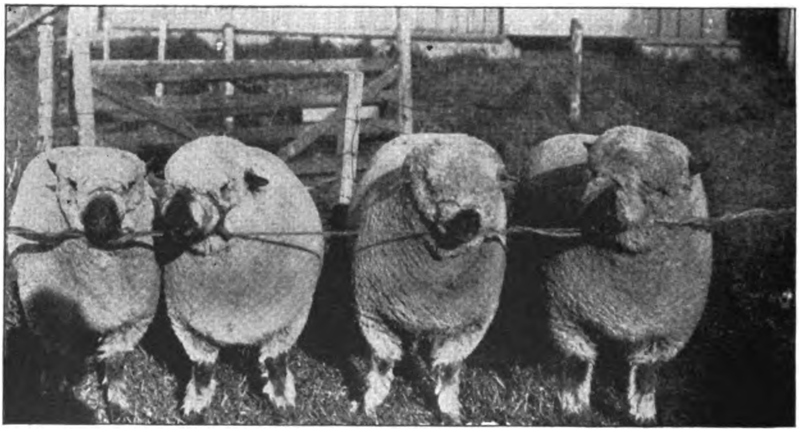
INTRODUCTORY STATEMENT

The general report of the farmers' institutes for the year ending September 30, 1912, will be included in the first volume of the annual report of the Commissioner of Agriculture to the Legislature, covering that period. The following addresses at the institutes are issued separately in bulletin form in advance of the general report.

CALVIN J. HUSON,
Commissioner of Agriculture.

JULY 30, 1912.



Prize-winning Ram Lambs.

SHEEP RAISING FOR THE FARMER

By Lowell Roudebush

Farmers' Institute Lecturer

The sheep might be defined as a domesticated animal with political affiliations. There are many reasons why farmers in New York should raise sheep. They are the scavengers of the farm. I am not using the term scavenger in its ordinary sense; I mean they will destroy more noxious weeds, briers, elders, etc., than all the rest of the domesticated animals found on the farms of the United States, save the goats, and in this destruction they will find nutrients that will make growth, wool and fat. I do not want to be misunderstood in this connection; sheep will not and should not be expected to subsist exclusively on weeds and shrubs, but as the sheep loves a variety, it will utilize these pests to a better advantage than the hog, horse or cow. Again, weeds are the homes of many of our most injurious insects in one or more of the several stages of development, and this is a factor of value but little appreciated by the farmer. They also help beautify the farm by making it look as if its owner and the community were up-to-date and prosperous.

The sheep can be raised on a rougher class of land — and New York has many acres of such — to better advantage than the dairy cow for reasons already given and specifically for the following: They do not tramp out the grasses, thus making erosion possible; their waste is concentrated and evenly distributed as compared with the cow or horse; they lie at night on the higher or the inaccessible part of the pasture, if there be any, and not on the lower and more accessible. This may seem to be insignificant, but it has a value. You may not have any high or rough land; it may be level, even swampy in places. This is no barrier to success. Of the many different breeds of sheep, there are some which are naturally adapted to low, to medium or to high-lying situations. For a swampy farm, the Romney Marsh; for a fertile valley farm, the Downs; for a high and rough situation, the Dorsets or Merinos. In fact, you need not err. Raise the breed that you like best or that is adapted to your soil, climate and market, producing mutton, wool or both, hot-house lambs or spring lambs. In raising mutton breeds profitably, the New York farmer can compete with the central and western states. They can produce lambs really cheaper, and have a market much nearer their farms.

It is true that in the dark days of the early nineties, mutton sheep went a-begging, and there was a reason for this. The great tidal wave that for a time apparently overwhelmed the sheep industry in the United States, so far as it is related to mutton and wool, was really a blessing in disguise, even when it ruined financially hundreds of farmers. All things that have ultimate value cost time, labor, money, and sometimes the shedding of human blood. What was the compensation? It rid the farmer of worthless individuals and breeds not adapted to his soil, climate and market; better still, when the shepherd could not sell his flocks at a profit or even give them away, he slaughtered them for his own consumption and found, to his surprise in many instances, that mutton was palatable, healthful and need not taste of the wool if properly dressed; and as a direct result the farm consumption of mutton increased at a wonderful rate. Not only that, its low price as compared with pork and beef attracted the attention of the urban consumer and he found, too, that mutton was really good. As a result he has kept on buying it at increased prices, until to-day, the per capita consumption of mutton has increased over five hundred per cent. since 1890, and a great industry developed, which New York farmers should be quick to see — the feeding of lambs and its side issue of producing hot-house lambs.

Will this industry or branch of sheep husbandry continue to be profitable? Yes, because the flesh of the sheep is more wholesome and nutritious than that of any other of our domestic animals used for food. We hear much about tuberculosis of cattle and hogs. We know that sheep are freer from this disease than any of our animals, unless it be the horse. The steer may have pleuro-pneumonia, blackleg, Texas fever or foot-and-mouth disease; the

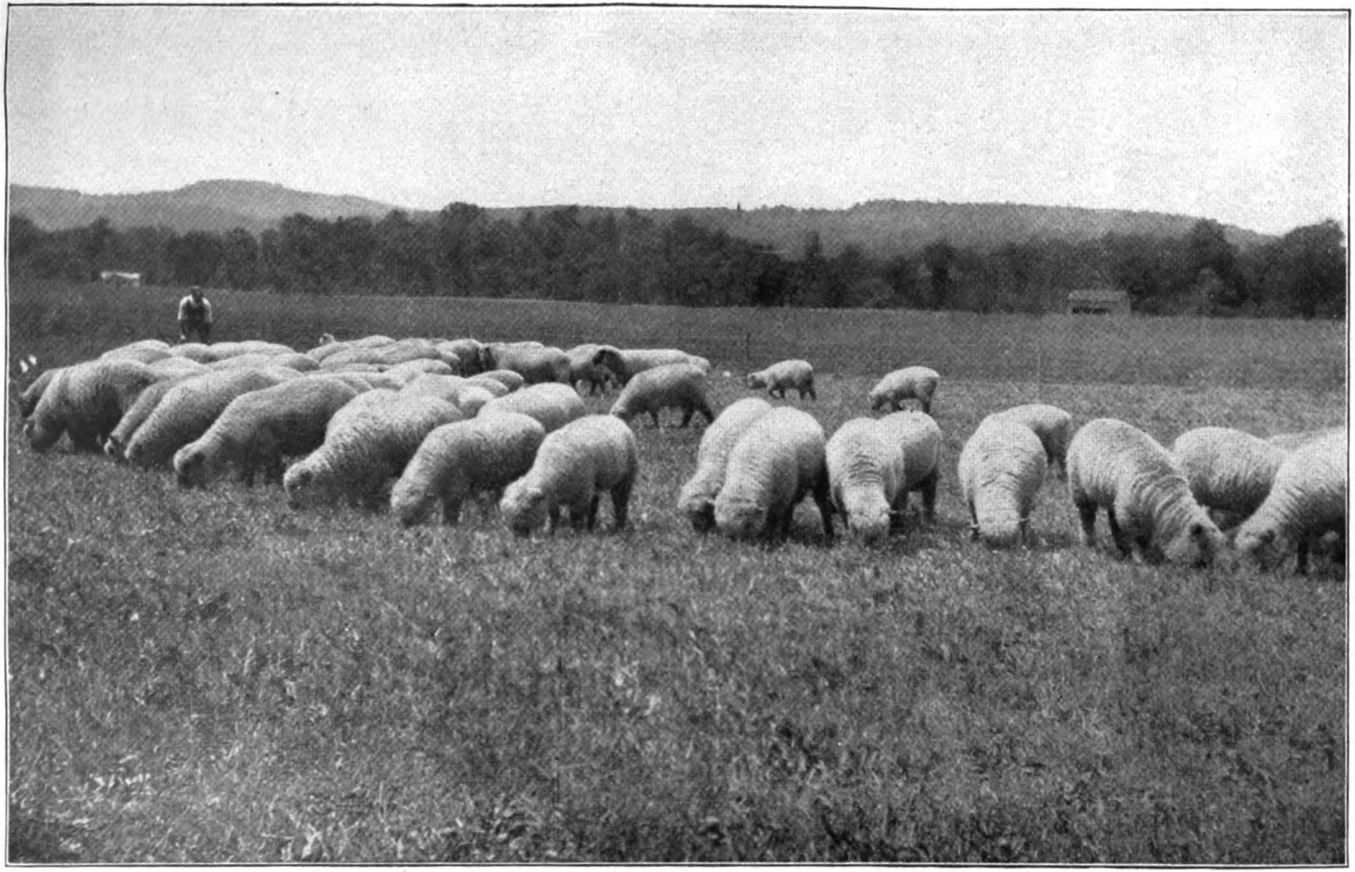


Fig. 49.—American-bred Shropshires.

Used through the courtesy of the Breeder's Gazette.

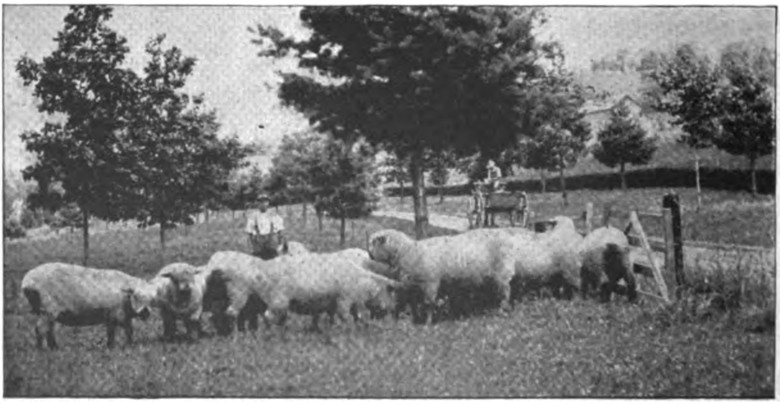
hog, swine plague, hog cholera, measles, quinsy, trichinosis and tuberculosis in the incipient stage, and the expert even not be able to detect them, but anyone can tell at a glance when the sheep is ailing. Much of the flesh consumed is inspected, but not all, and for this reason, if for no other, the urban consumer will use mutton in larger quantities in the future than in the past.

So far we have dealt with our so-called home market. The low price of mutton already referred to attracted the attention of foreign consumers. From 1880 until 1898, Argentina was our competitor in the English and other markets, and from 1890 until 1898, exported live sheep to England alone on an average of 595,000 annually. In the latter part of 1898, Europe placed an embargo on the importation of live sheep from Argentina because of the presence of contagious and infectious diseases in that country. Exports of live sheep from the United States have decreased of late years, owing to the prohibitive prices, in the main, yet farmers east of the Mississippi have stood still and permitted their western brothers to reap a rich harvest by supplying the great centers of population with mutton and hot-house lambs.

Fortunately the sheep is a dual animal. It can and has been bred for either flesh or wool. Sheep can be profitably raised in New York from the pure standpoint of wool, but they must be the A, B or C grades of merinos in the so-called fine wools. In the early nineties fine wool could scarcely be given away, owing to the large Australian exports. In 1880 that country had 35,000,000 sheep. After the use of woven wire fencing, which kept the sheep in and the rabbits out, the increase was very rapid, and in 1895 they numbered 147,000,000. This increase spelled disaster, for flock masters had overstocked their farms. The native bunch grasses would not stand close cropping, and disease and drouths reduced their flocks until in 1901, they were where they started in 1880.

Australia cannot produce a better fine wool than some parts of the United States — western Pennsylvania, northwestern Virginia and southeastern Ohio,— but with her enormous production the markets were overstocked. By 1890, manufacturers of woolens discriminated against the American product with good reason. It was in the handling. Pacific Coast versus New York State apples, so far as relates to packing, will illustrate the point. The Australian flock masters skirt their fleeces, sell the tags for what they are. The manufacturer who bought Australian wools knew just what he was getting. They were no better than New York wools of the same class, but the fleeces were intelligently and honestly handled. Did you ever buy wool of your neighbor, and were you not surprised at the amount of his farm that he could put into each fleece and sell to you as wool? He did not mean to be dishonest, although seemingly regardless of the teaching of the Decalogue and the Golden Rule. Buyers did not allow enough for honest handling — both were to blame. Wool is better handled to-day than ever before. It should be sold either as washed or on a scoured basis, and buyers should put a premium on good handling.

We do not advise all New York farmers to raise mutton or fine wool — most of them did, however, before the Civil War — but the fine-wool sheep or mutton breeds should appeal to many, as they did fifty years ago. Sheep cannot be flocked successfully in large numbers, five to twenty-five will give best results. They will live in part on the waste forage and grain crops, destroy weeds and afford a nice income in both wool and mutton. It is true that the sheep and dairy cow do not supplement each other, but the dairy industry is slowly but surely drifting southwest. New York for the most part is adapted to sheep, and, in general terms, they will be more profitable on most farms than dairy cows and help to solve the labor problem and eliminate the everlasting grind of shipping milk.



CARE OF THE DAIRY CALF

By E. H. Dollar

Farmers' Institute Lecturer

One of the most important questions confronting the dairyman of to-day is how he shall replace the worn-out or unprofitable cows that must be removed from the herd each year for one cause or another. In the past two methods were used, and in some sections of the state, two methods are still followed. The dairyman may purchase from his neighbor in open market cows already grown and giving milk, to take the place of the ones that have become unprofitable. This method has been followed very largely in sections where whole milk is shipped to the city, because dairymen believe, or have believed, that cows could be bought for less than they could be raised on the farm. That this is the cheaper method is undoubtedly correct, but not more profitable, since it is becoming more and more difficult each year to buy the kind of a cow we want to put in our herd, the cow that can consume and convert into dairy products the high-priced feed we must purchase, so that a profit will be derived from her maintenance. The time is past when we can depend on our neighbor to supply us with the cows that are to be the profit makers on our dairy farms.

There are several reasons for this. One is that the farmers throughout the dairy sections of the state are becoming more efficient. They are studying their business more and more each year and learning the necessity of knowing exactly what each cow is doing. And for that reason they are unwilling to sell or offer for sale their best cows, unless at an exceptionally high price. When the up-to-date dairyman offers to sell some of his cows, we know that they are the least profitable of the herd, the cows, if you please, that must be fed a dollar and a half worth of feed to produce a dollar's worth of milk.

Occasionally a man offers to sell his whole herd, and this would seem to be an opportunity to secure some good cows. But on looking over the situation, we find that on an average such men are disposing of their dairies, not because they have been successful dairymen, but because they are dissatisfied with the income from the operation of the dairy farm and are not receiving a satisfactory return for the labor and money invested. I have never yet heard of a man going out of the dairy business because he was making too much money.

If we are to continue dairying and increase the yield of our herds in proportion to the increasing cost of production, we must use the other method and breed the future dairy cows on the farm. Very few breeders will be found who will not agree that better cows can be bred and developed on our own farms than can be purchased from our neighbors, providing, of course, that proper methods are followed in the production of such cows. However, a great deal of trouble is encountered in caring for and raising the calves, and we often hear that a dairyman has been unable to raise a single calf in a year, but has lost every one from some cause; and when we try to persuade a dairyman to use a better sire and raise better cows, we find he is not always very ready to try it. It is this branch of the business that I wish to talk about — the question of growing and developing the calves; and I will take some time in discussing the details of calf raising.

In the first place, we must consider the calf as an infant, and it must be handled and fed very much the same as a baby. I believe that it is safe to say that 90 per cent. of the calves that die at less than six weeks of age, die from one of two reasons — indigestion caused by over feeding, irregular feeding, or feeding milk of a lower temperature than that to which the calf is accustomed; or from infection caused by feeding from dirty pails. How many times we go into a calf barn and find the pails turned bottom side up on the floor, and there they remain from one evening until another, from Monday morning until Saturday night and from one month to the next. Is there any wonder that a calf a week or two old, fed from such pails, becomes sick and after a few days dies? And the infection passes from one calf to another, and many times the entire herd is lost.

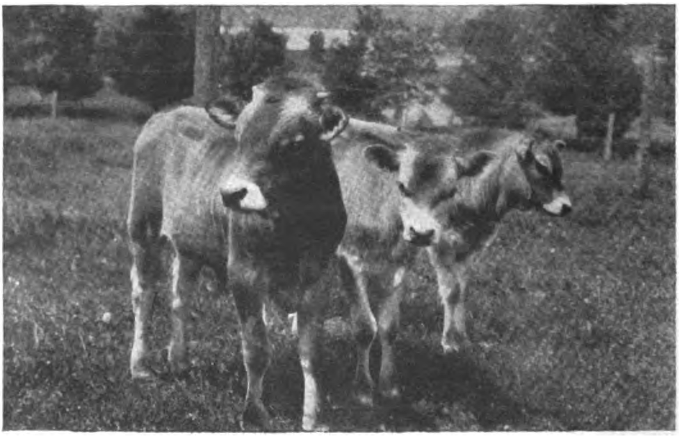
Again, we find a man who keeps his pails clean, but who is over generous. He wants his calves to grow fast, and so feeds them all they will eat, but feeds them only twice a day, allowing them to gorge their little stomachs with six or eight quarts of milk, when they should be fed one or two quarts at a time and that four times a day.

Let us start with a calf at birth. We will take it for granted that the mother has been properly nourished and properly housed, so that this infant has been brought into the world in a strong, vigorous condition. The mother and calf are placed in a box stall, loose, and left there for a short time, varying from six to twelve hours according to the condition of the calf, but not longer then twelve hours under any condition. There are two reasons why the calf should be removed from the dam so early. We do not want the milk taken from the udder of the cow in too large quantities for at least two or three days after calving, because we have learned from experience that the heavy-milking cow that has had her udder entirely emptied soon after calving is apt to have milk fever or, at least, is more liable to this disease than she would be were her udder left well distended with milk. But the principal reason, so far as the calf is concerned, is that we do not want it to take into its stomach too much milk at one time. It should have a little of the mother's first milk, this seems to be necessary; but as soon as the calf becomes strong enough and begins to show a tendency to take too much of this milk, remove it at once to a separate stall, milk a small quantity from the cow four times a day or every six hours and feed it immediately, so that the calf will have the milk as near the temperature it came from the cow as possible. Of course, the amount fed must be regulated according to the calf, but perhaps should not exceed one and a half pints every six hours. The feeding pail should be sterilized or scalded every day; in fact, I believe it more necessary that the calf pails be given the very best of care than it is that the milk pails be looked after to the neglect of the others. This little calf, then, should be fed three or four times a day for at least two weeks. One of the greatest mistakes made by many calf feeders is that they ask the calf to go too long between feeding times, and then allow it to take too much milk into its stomach at one time. Calves should be fed very much as a baby is fed, and no one would feed a healthy child at 7 o'clock in the morning and then not until 7 o'clock at night.

After the first two or three weeks, the calf should be gradually changed from a whole-milk to a skim-milk diet by adding each time a little skim-milk direct from the separator, and it may also be fed three times a day instead of four. In this way the calves will derive nearly as much nourishment from the skim-milk as from the whole milk. To the skim-milk may be added a small amount of flaxseed to replace the fat removed by the separator. This is an excellent feed, and one on which calves do well. We feed milk to our calves as long as it can be spared, many times until they are a year old, but at no time do we exceed six or eight quarts at one feeding.

As a grain ration to be used in addition to the skim-milk, we have found nothing better than 200 pounds of wheat bran, 100 pounds of hominy and 100 pounds of oil meal, fed all the calves will eat twice a day. With this is mixed a little salt and a liberal amount of charcoal. Charcoal is an excellent preventive of disease and an aid to digestion, and it may be fed every day.

In raising calves we endeavor to have them grow rapidly, in order that they may reach their maximum production, their highest yield of milk, at the youngest age possible. We believe that more can be done in the first year of a calf's life toward making it a profitable dairy cow, than can be done in any two years afterwards if the calf has been neglected. Grow the calf fast, feed it liberally, and get away from the idea that a cow must be eight years old before she reaches her best.



CARE AND MANAGEMENT OF THE WORK HORSE

By M. W. Harper

Assistant Professor of Animal Husbandry, Cornell University

With the hard-working horse the importance of good care cannot be overestimated. Give two drivers similar conditions as to horses to be cared for, work performed and feed bins to draw from. In one case the team comes from the stable with an action and style which at once announces it in the best of condition; in the other case the lagging step, dull eye and rough coat express better than words the lack of judgment in the feeding and general care. The unsatisfactory condition has not necessarily been brought about by any saving in feed; indeed, the poorer groom usually makes the more frequent requests for supplies. As we study the practices of successful horsemen, we are strongly impressed with the fact that there are several ways of reaching the desired end of high finish and fine action, and that in every case the grooming plays the more important part.

FOOD AND ENERGY REQUIREMENTS FOR WORK

In feeding a working animal the essential product of the food is energy to be used in drawing, walking or trotting and the like. Plants during growth absorb heat from the sun, which is held in the form of energy in the compounds elaborated. When these compounds are taken into the animal body and broken apart by digestion, some of this stored energy is transferred to the animal body. It is the horse that is depended upon to extract this stored energy from the plant and make it serviceable to man. The work horse, therefore, may be compared to a steam-engine in which such foods as grain and hay serve as fuel, though it differs from the engine in that the steam is not used as the medium between heat and energy. The horse, however, makes better use of the energy in the food than does the steam-engine of the energy in the fuel, as about one-third of the total food energy can be converted into useful work with the horse, while the steam-engine may recover as much as one-tenth of the energy consumed in the fuel.

To gain an idea of the food requirements for work, we must understand two factors: First, the energy values or the amount of energy contained in the foods fed; second, we must know something of the amount of work performed.

Energy value of foods. Foods vary considerably in their energy value, that is, in the amount of muscular activity they are capable of producing. The method of determining and measuring the energy value of food is too involved to discuss here, and we will dismiss this subject by considering the comparative values of a few of the various groups of feeding stuffs.

The green forage crops, blue-grass, June-grass, clover, alfalfa and the like, contain much water; hence, they are more or less succulent or juicy. They contain considerable nutritive material and have a good physical effect upon the horse. Of these, the leguminous forages, such as clover and alfalfa, are the richest in energy value; because of the high water content, however, all these green forages are comparatively low in energy. When these forage crops are dried and cured, the resulting hay is richer in proportion to its bulk than the green material; in other words, it has been concentrated by the evaporation of the greater part of the water present. When hay is properly cured it undergoes a peculiar sort of fermentation or oxidation which materially improves its quality by diminishing the quantity of the fibrous or woody material and increasing the relative amount of other nutrients. Hay that has undergone proper fermentation has a better flavor, agrees better with the horse and is apparently more digestible than hay that has dried quickly in the sun without fermentation. Because of the change, the energy value of dry, well-cured hay is approximately twice that of the green forage.

The cereal grains, oats, corn, barley, rye and wheat, are concentrated in their nature, that is, they contain relatively small amounts of fibrous or woody material and very large quantities of the more easily digested nutrients. Their water content is also very low. Hence these cereal grains are rather rich in

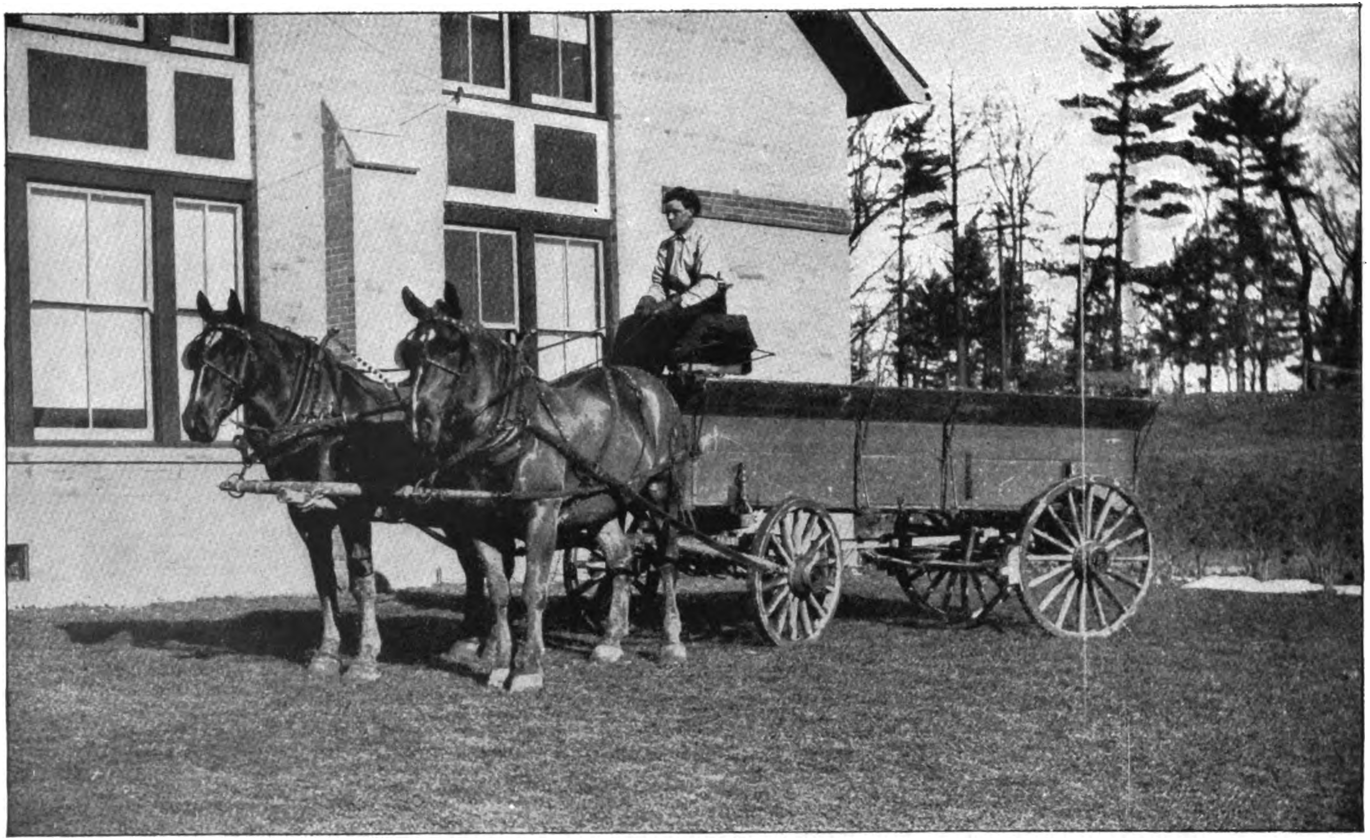


FIG. 50.— DRAFT HORSES IN FINE CONDITION.

energy value, approximately twice that of the dry, well-cured hay. From these figures, it would seem that one pound of grain, so far as energy values are concerned, is equal approximately to two pounds of dry hay or four pounds of green forage. This is an important observation when calculating the food requirements for work.

Work performed by a horse. It would be a good day's labor for a 1,000-pound horse to travel 20 miles over a smooth, level dirt road and draw a wagon with a load of 2,000 pounds. The draft of the loaded wagon would not be far from 100 pounds. The determining of the amount of food energy to accomplish this task is too involved to discuss here, but it can be calculated very approximately. It is important to note the influence of speed on the labor expended. A horse that trots 20 miles a day must have more food than when he walks 20 miles; in the same way, draft animals require food somewhat in proportion to the pace with which they travel over a given distance.

Food requirements for work. Many experiments have been made to determine the exact relation between the amount of muscular work performed and the amount of nutrients required per day. The standard rations now found in German tables are the result of such experiments. According to these observations, a 1,000-pound horse requires approximately 11.4 pounds of digestible food daily when doing moderate work, 13.6 pounds for average work and 16.6 pounds for heavy work. This digestible food would be furnished by a ration consisting of 12 pounds of hay as forage, and a mixture of 10 pounds of grain, consisting of equal parts of corn and oats, for moderate work, 10 pounds of hay and 15 pounds of the grain mixture for average work, and 10 pounds of hay and 20 pounds of the same grain mixture for the heavy work. It must be remembered that these standards are guides to be modified according to conditions.

The speed at which the horse travels, the way in which the load is distributed, the temperature of the atmosphere, evidently have an effect upon the work performed. Increased speed, increased temperature and faulty distribution of the load increase the work. An increase in the work means an increase in the food consumed or the horse will lose weight.

FOODS THAT INFLUENCE DIGESTION

Some foods, in addition to the nutrients they furnish, exercise an influence on the digestion so favorable as to place their value far above what is represented by the nutrients which they contain. The influence thus exerted tends to correct the harmful results that grow out of constipation or undue laxity of the bowels. Because of this, when used mainly to give proper tone to the digestion, the real value of such foods is usually far above their market value. When fed for such use, small and moderate, rather than large quantities, should be supplied. This list of foods includes all kinds of field roots, as carrots, turnips, rutabagas, parsnips and the like; such by-products as bran and oil meal; such hays as alfalfa and clover, and green grass.

REGULARITY IN FEEDING

The importance of regularity in everything that pertains to the management of the horse cannot easily be overestimated. This applies particularly to feeding. Whatever feeding stuffs are employed in the ration, the horse should be fed regularly and uniformly at all times. The horse anticipates the feeding hour and becomes nervous if it is delayed; he neighs and coaxes for his food with great regularity. The horse's digestive system and his vital activities become accustomed to a certain order which must be followed if one is to be successful. To change that order for even a single meal, produces more or less digestive disturbance. The horse's digestive system is not so large proportionately as that of a cow or sheep, he has no rumen, no place to store his food to be masticated at will; hence, when at work he must be fed regularly and often. Undue fasting is followed by taking an excessive supply of food, which, in turn, calls for excessive drinking with consequent digestive disorders.

Order of supplying food. Because of the small size of the horse's stomach, the order of supplying grain, hay and water assumes much importance. Investigators have shown that the stomach of the horse must fill and empty itself two or three times for each meal given. It appears that during the forepart of the meal the material is pushed into the intestines by the food which follows almost as soon as it enters the stomach; while toward the end of the meal, passage is slow and the digestion in the stomach more perfect. This being true, it would seem that the more nutritious foods should be fed toward the end of the meal, especially since some of the very important nutrients are largely digested in the stomach.

Watering the horse. One cannot intelligently discuss the order of giving the feed without considering the time of watering. Many feeders believe that the horse should be watered before feeding, while others are equally certain that feeding should precede watering. Each of these methods is probably equally good for the horse, and the one employed will be determined by circumstances. Certain conditions make it necessary to adopt one, other conditions the other. For example, after severe loss of water, such as occurs in consequence of long-continued, severe exertion, the animal may perhaps be allowed to drink before he is fed, otherwise he will not feed well. On the other hand, it is said that this method of watering affects the appetite, and the horse will not consume as much food as he otherwise would. Again, it has been very clearly demonstrated that if a horse is fed his grain first and then watered, much of the food is carried into the intestines by the water. Since the grain of the ration is rich in digestible nutrients, it should stay in the stomach as long as possible, for the digestion of one of the most important of the nutrients is more complete there. A middle ground should be taken by watering first, feeding the grain sprinkled with a small amount of moistened, chopped hay, if possible, and watering again after the ration has been consumed. If this practice is followed, it will satisfy the desires of the horse by supplying the most palatable part of his food early, and yet insure the retention of the grain in the stomach for a considerable period of time.

Changing foods. Sudden changes in the food are to be avoided for the reason that the digestive system, in many cases, is unable to accommodate itself at once to such a change, and digestive disorders follow. Such changes sometimes result in scouring, as when the horse is suddenly transferred from a dry to a watery diet, when a horse has been kept on a dry ration all winter and then turned out early in the spring when the grass is very succulent, especially if the horse has been worked continuously.

Sometimes a sudden change induces constipation, such as change from a pasture to a dry ration. Sometimes the digestive system is so overtaxed that it is permanently weakened, as when horses unaccustomed to grain are too quickly put on full feed. If the changes are made gradually, the system can digest without much risk quantities of newly-induced food that would have produced serious digestive disorders or derangements had they been given at first.

PREPARATION OF FOOD

The preparation of the food for idle horses need receive little attention. Such animals have ample time to masticate their food. Their systems not being taxed by labor, they can subsist on food containing much fibrous matter, such as hay, straw or corn fodder, fed in the whole state.

When horses are taxed to the limit of their endurance, however, the preparation of their food should receive attention. In this case all grains should be ground and, if convenient, most of the hay cut or chopped. Food thus prepared is more thoroughly and rapidly masticated and perhaps more thoroughly digested, especially ground corn. Long hay should, of course, be supplied the animal to be consumed at leisure, and, as hay is always more or less dusty, it should be fed in such a manner as to cause the horse the least annoyance. Moistening or sprinkling the hay with water is the simplest way of reducing this trouble. Of course, dusty hay should be avoided whenever possible. It is often asserted that soaking feed, especially hard grain, renders it more easily masticated and improves the digestibility, and the same advantages are often held for cooked foods. It is very doubtful whether it ever pays to soak or cook feed for the horse, provided he is healthy and has sound teeth. This applies to the mature animal.

FEEDING THE WORK HORSE

The work horse has a hearty appetite, a vigorous digestion and responds as does no other animal to intelligent care. He should be fed liberally and frequently, the amount given being regulated by the size of the animal as well as by the amount and kind of work he is required to do. In general, the horse should be supplied with something over two pounds of provender daily for each hundred pounds of weight; of this about two-thirds, the exact amount depending on the severity of the labor performed, should be grain in some form. If the work is exceedingly heavy, the grain in the ration should be increased and the hay diminished, whereas, if the work is light, the grain should be diminished and the hay increased. The morning meal should be comparatively light, consisting mostly of grain, and it should not possess much bulk. In many of the larger stables the midday meal is omitted, but all horsemen hold that some grain should be given at noon, which seems reasonable from our knowledge of the horse's stomach. In any case the midday ration should not be large; the heavy feeding should come at night, after the day's work is over and when the animal has ample time to masticate and digest his food.

A very good practice is as follows: For the morning ration, feed one-fourth of the daily allowance at least one hour before going to work. It should be in condition to be easily and rapidly consumed, so as to be well out of the way when the animal is led from the stable. After being watered he is ready for the morning's task. If the work is exhaustive and exacting, he should be fed after five hours of labor. When he comes to the stable at midday he should have a drink of fresh, cool water, taking care that he does not drink too rapidly or gorge himself if very warm. At this time give him another quarter of his daily allowance. No greater service can be rendered the horse than to remove the harness so that he can eat his meal in quiet and comfort and gain a few minutes of much needed rest. If possible, he should have one hour to consume his meal, and he should be watered again before going to work. He is now ready for the second half of his day's labor. When the horse comes to the stable in the evening tired and warm, he should, first of all, be allowed a fresh, cool drink, care being taken as before that he does not drink too rapidly. He is now ready for the remainder of his day's allowance. Unharness at once, and when the sweat has dried give him a thorough brushing. If for some reason the horse is forced to stand idle in the stable for a few days, the ration should be decreased, otherwise he will become stocky and his legs swollen and stiff.

During the cold weather a more carbonaceous ration may be used. When more food goes to furnish heat for the body, it is reasonable that a horse needs a large proportion of heat-making food. Equal parts of corn and oats by weight would be more satisfactory and ordinarily cheaper than a larger proportion of oats. Since most farmers have much less work for a horse in winter than in summer, it is an excellent plan and much more economical to rough through the winter those not needed for work. However, those reserved for work should have good care and be fed according to the amount and kind of work performed.

In providing a ration, whether for summer or for winter use, due consideration should be given to the cost. Roughage is ordinarily much cheaper than grain, but a horse at work is unable economically to dispose of a large proportion of bulky food. If considerable time and energy must be expended in masticating rough feed, the usefulness of the horse for work is lessened. The more concentrated the food, within proper limits, the less percentage of energy will be needed to make it available. The proportion of grain to roughage depends upon the amount and kind of work to be performed, but a horse at hard work should never be expected to consume more roughage than grain by weight.

WINTERING THE IDLE HORSE

On the average farm most of the work comes during the growing season. We think it more economical, and perhaps advisable, that the idle horse be turned into a lot, if it affords some protection, to be roughed through the winter rather than confined too closely in the barn. As winter comes on the horse will grow a heavy coat of hair, which will afford excellent protection. Such a horse may be maintained largely upon hay, straw or corn fodder, fed uncut, as it has time to masticate food, and, not being taxed by labor, it is able to subsist on food containing a large percentage of inert matter. If straw or corn fodder is used, some grain should be fed, about four pounds per day. We think it is better to have the digestive tract of the idle horse moderately distended with coarse material rather than contracted, as would be the case if grains possessing only the requisite nutrients were supplied. If the protected area is kept dry and well bedded, the horse can be comfortably wintered in this way at much less expense than by stabling. To put the horse in condition, light grain feeding, together with some work, should begin six weeks before the spring work starts.

FEEDING THE BROOD MARE

Many farmers are so situated that they may raise a team of colts each year without seriously interfering with farm operations. This is a good practice as there is a demand for good horses for both city and farm use. A team of mares in foal can be worked until the day of foaling, if the work is not too severe and the driver careful, in fact, moderate exercise is necessary for the mare in foal. Idleness is the bane of horse-rearing and should be avoided whenever possible. The Arabs have a saying, "Rest and fat are the greatest enemies of the horse." Mares in foal should be fed as suggested for work horses, with perhaps the addition of more protein foods, as bran and oil meal, since such foods, rich in protein and mineral matter, are valuable for mares carrying young foals. Through the use of proper foods the bowels should be kept in good condition and should be a little loose rather than otherwise at the time of parturition; if the mare is constipative, bran mash may be given occasionally. While the mare may be worked up to the time of foaling, she should be given a few days rest after foaling to enable her to gain her strength and give the foal a proper start. For the first few days of recuperation, a hot bran mash fed once a day has both a cooling and a laxative effect on the mare, which is very beneficial. If all has gone well with the mare and foal, the mare may be put to work at the end of one week from the time of parturition. Some dams, especially those with their first foals, fail to supply the proper amount of milk and the young foals do not thrive. In this case the mare should be provided with food which stimulates the milk flow. Good pasture grass is best, of course, but oats or wheat bran, with an occasional bran mash, may be given. If there is an over-supply of milk, or if the milk is too rich, the food may be restricted.

CARE OF THE HORSE'S TEETH

Occasionally a horse is found that does not feed well, due to irregularities of his teeth. If the first, or milk teeth, are not looked after, they are likely to remain, causing the second, or permanent teeth, to grow in crooked. The young horse's mouth should be closely watched and the persistent milk teeth removed with forceps. Again, it must be remembered that the upper jaw is somewhat wider than the lower, and, from the fact that the teeth are not perfectly opposed, a sharp edge is left unworn on the inside of the lower molars and on the outside of the upper, which may cut the tongue and cheeks. This condition can readily be felt by hand, and these sharp edges when found should be rasped down by a guarded rasp; otherwise the tongue and cheeks become sore, the food irritates them, and the horse will not feed well.

In all cases when a horse "quids" its food, when it is slobbering or when it evinces pain in mastication, as shown by holding its head to one side while chewing, the teeth should be carefully examined. In addition to not feeding well, a horse whose teeth have unduly sharp edges is likely to drive badly, to pull to one side, not to bear on the bit or to bear on too hard, to toss the head and start suddenly when a tender spot is touched.

GROOMING

The grooming of the horse deserves careful consideration. Nothing contributes so largely to the beauty and lustre of the coat as grooming. Because of this, the body usually receives sufficient attention, but the legs entirely too little, whereas the legs should always receive the more care, since that is really more important than the care of the body. On arriving at the stable if the animal's legs are muddy, they should be roughly cleaned by using a half-worn, common broom; the animal should then be placed in the stable, fed, unharnessed, given a thorough grooming and blanketed. The legs should not be neglected, but be given a thorough and rapid brushing. Time spent in cleaning and rubbing the horse in the evening after the day's work is done, is worth much more than the same time thus spent in the morning.

If the animal is working in the mud, it is desirable that the hair be clipped from the limbs, as by so doing they may be kept clean with much less difficulty. In case the legs are clipped it is all the more important that they should be thoroughly cleaned

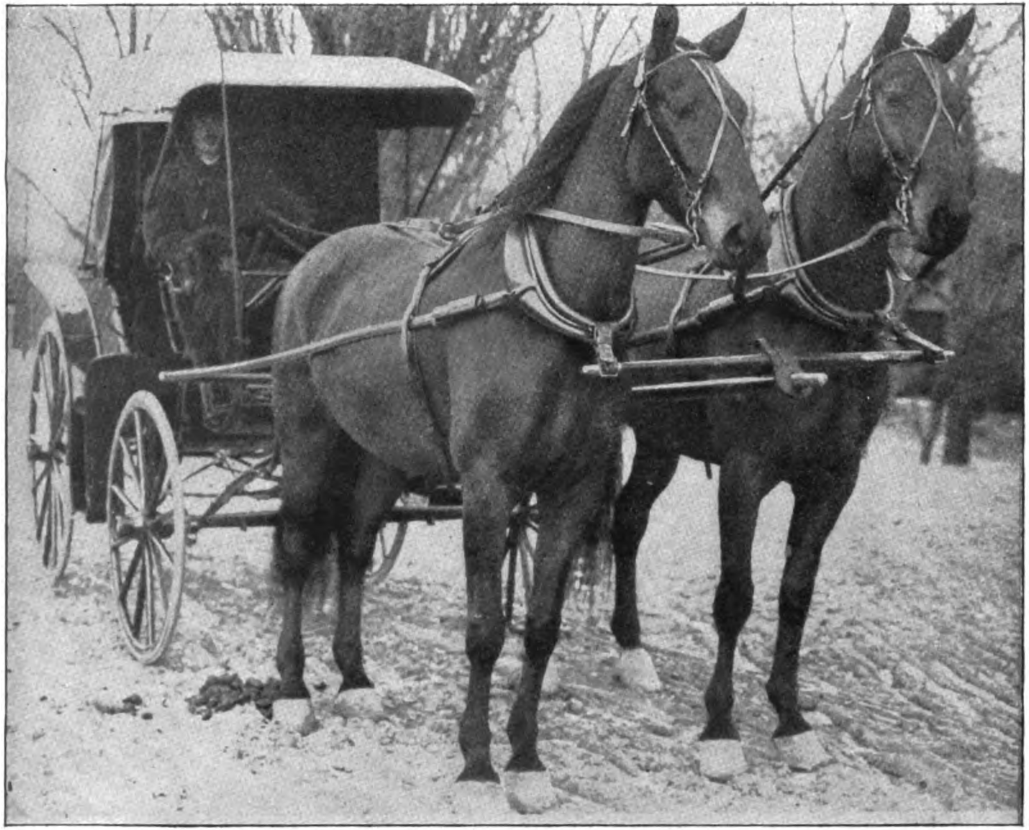


Fig. 51.—A Well-groomed Team of Driving Horses.

and rubbed each evening after work. The hoofs should be examined and the cleft between the sole and the frog cleaned.

Animals cared for in this manner will pay for the extra care many times over in the satisfaction in having the team come from the stable in the morning in the best of spirit, indicated by the pleasing appearance, the snap and vigor with which they lift their feet and the complete absence of any stiffness in the joints. Again, animals whose limbs are thus cared for will remain comparatively free from the many diseases to which the legs and feet are subject. This care will greatly increase the horse's efficiency and prolong his usefulness.

CLIPPING

This consists in cutting the hair over the entire surface of the body. Several advantages are claimed from clipping: It improves the appearance of the horse and renders his coat more easily cleaned; a clipped horse is less liable to take cold than a long-coated one because the evaporation is more rapid and the horse does not get so warm; the natural process of shedding the hair is a draft on the vitality of the animal, the appetite is diminished and the horse runs down in flesh. Clipping accomplishes in a very short time what nature requires much more time to do. From this it would seem that horses with long, thick coats should be clipped.

If horses are to be clipped twice each year, the operation should be performed the first time soon after the hair has grown out in the fall. When thus cared for, they become used to the change before cold weather and some growth of hair before winter is also allowed. The second clipping should be in early spring as soon as the weather begins to get warm and before they begin to shed the winter coat. Horses thus treated will be much more easily kept in presentable condition, and if protected by blankets and properly groomed will pay many times over for such extra care.

When horses cannot be protected from the cold and wet, either in the stable or outside of it, they should not be clipped in the fall. Animals exposed to the weather grow a long coat for their own protection and this should not be removed; if, however, the owner means to give them extra care and attention, they may be clipped.

BEDDING THE HORSE

Bedding should always be used liberally. A horse at hard work needs rest at night, and much more rest is had when the horse is given a good bed. The bedding should not be permitted to become foul, as it will not only lessen the comfort of the animal but promote disease as well. Of bedding materials, straw leads the list, but when high in price, may be replaced by other materials, such as shavings from the planing mill, rejected portions of cornstalks, tan-bark, leaves and the like. Old straw is preferred to new, as it is dryer and more elastic. The more broken and bruised the straw the less its bulk and elasticity, hence the more needed.

BLANKETING

In our climate the use of blankets is indispensable. The horse will prove more efficient and will endure much longer if reasonably protected against sudden changes in temperature, the cold rains and the heavy winds to which we are subject.

Stable blanket. The proper use of the stable blanket is of first importance. It is a common practice after the day's work to hurry the horses into their stalls, unharness, blanket them at once, feed and leave them for the night. In the morning it is desired to get to work early, the horses are fed, the blankets removed, the animals curried a very little, the harness is put on and in a few minutes the horses are at work. Animals treated thus stiffen in the joints, develop leg and foot diseases and soon become useless, and may be sold or traded as part payment of others to undergo the same treatment.

The usefulness of a horse can be prolonged and his efficiency increased by proper blanketing and grooming. On arriving at the stable very warm and sweating, the horse should not be blanketed until he has ceased to steam, nor should he be left in a draft. If blanketed at once, little opportunity is given for him to dry off, the blanket will become damp and the hair remain so all night. In case the blanket is not used until the animal has ceased to steam and is somewhat cooled, which will be in a quarter of an hour, the hair will be dry and smooth the following morning. Stable blankets may be disposed of in the hot summer months if the flies are excluded by screens or by some other means. If blankets are used at this time, they should be of light material and kept clean. As soon as the nights begin to get cool, the blankets should be continued, as an early use will arrest to a marked degree the growth of hair. This may obviate the necessity of clipping, as the coat of hair is kept short and comparatively thin. In case the horse is clipped, and it is well that he should be if the coat of hair is dense and long, he should be covered for a time with an extra heavy blanket or with two blankets.

Outdoor blanket. The use of the outdoor blanket is as important as the use of the stable blanket. If the horse is allowed to stand outdoors for either a short or a long time, he should be well blanketed, although if one is going to stop but a short time the temptation not to blanket the animal is strong. The horse cools off rapidly and may chill, so that it is best to blanket if only for a moment. Again, in the spring when the weather is nice, one is likely to think that no ill will result from leaving the animal unblanketed; and yet he may chill as before. It is best on stopping the animal to see that he is well protected at all times.

CARE OF THE FEET

Because of the great importance of the foot it should be carefully cared for throughout the active career of the horse. Each evening after returning from work, as well as in the morning before being sent out, the sole of the foot should be examined and all foreign materials removed. For this purpose a small hay hook with the point sharpened is excellent. It is very common to find foreign bodies, such as nails and stones, either driven into the wall or sole of the foot or collected in the cleft along the frog, and it is very essential that they be removed if the hoof is to remain in healthy condition.

Occasionally the hoofs have a tendency to dry out, thus becoming hard and brittle. Such hoofs should be oiled with some good oil, as linseed or olive oil, or with hoof ointment, of which there are many kinds on the market. This will soften the wall of the hoof, and make it less likely to crack or break. It often happens that a piece is worn or broken from the side of the hoof which throws the weight of the body in such a way as to bring a strain upon the joints of the leg, often causing deformity and disease. When such a break occurs, the hoof should be leveled with a rasp. Then, too, when horses are closely confined in the stable, the hoofs grow out long and if not trimmed will deform the limb and make traveling difficult. It is very important that such feet receive proper attention and be trimmed with a rasp.

The rate of growth of the hoof is of much importance, for we are often interested to know how long it will take a crack, such as quarter-crack, side-crack or toe-crack, a cleft or a calk to disappear. When we know the approximate rate of growth of hoof, we can estimate how long it will take such injury to grow out. On the average, the hoof grows one-third of an inch a month. Hind hoofs grow faster than fore hoofs and unshod ones faster than shod ones. While influenced to some extent by work or exercise, grooming, moisture and food, the time required for the horn to grow from the coronet to the ground varies in proportion to the distance of the coronet to the ground. The toe, therefore, depending on its height, grows down in ten to thirteen months, the sides, six to eight, and the heel in three to five months.

Shoeing. The horse's hoof wears off faster than it grows out and becomes sore. In order to prevent the hoof from wearing too rapidly, the feet are shod. While there are many reasons for applying shoes, the most important are as follows: First, to prevent wearing away of the hoof in order that they may not get sore. Horses show need of shoeing first in the fore feet, and in some parts of the country only the fore feet are shod. For this purpose the light shoe is preferred. Second, to prevent slipping on ice or mud. For this purpose, when the work is heavy, shoes should be heavy with large calks, but for light work, they may be lighter. In this connection it must be borne in mind that a smooth-shod (shoes without calks) horse slips more on the ice than though he were barefooted. There are several makes of shoes with removable calks. Third, horses are shod to modify their action.

Of the many things to be considered in fitting a shoe, perhaps the most important is to keep the foot perfectly level, thus preventing undue weight being thrown on one side and all the attending injuries. The frog should be left its normal size and shape to serve as a cushion for the foot. Make the foot normal; then make the shoe fit the foot.

In fitting a shoe nothing will aid one as much as a careful examination of the wear of the old shoe. The shoe should be fitted cold and not so hot as to burn the sole when placed against it in fitting. In nailing the shoe to the foot the nail holes should not be too near the edge of the sole, for in such case it is necessary to drive the nails too far up into the wall to make them hold. On the other hand, the nail holes should be well back, the nails small in size and when driven should be brought out well down on the hoof. If driven high, when the shoes are reset or the animal reshod, the former nail holes are near the edge and serve to weaken the hoof and interfere with driving the new nails. After driving the nails they are to be clinched in a small groove fitted for that purpose. Smooth with a rasp, but never rasp the outside of the hoof, as it will remove the natural protective covering. It is rather important that this natural covering be not removed, as the hoof will absorb water in the wet season and dry out much more rapidly during the dry season.

It is quite important that the shoes be reset frequently, as the hoof grows out over the shoes, causing the shoe to bear on the sole instead of the wall of the hoof. As to the frequency of resetting, all depends on the individual; some horses should have the shoes reset every two weeks, while others will suffer no inconvenience if left on eight weeks or until the shoes wear out. Neither can any general advice be given in the case of interfering, over-reaching, forging and like defects; each case must be treated after a careful study of its peculiarities.

Many shoes have been designed from time to time to save and protect unsound feet. Such shoes may allay the pain and prolong the usefulness of the horse, but most of them allow dirt and filth to gather under the protecting pad. Because of the wet, dirty and filthy condition of the frog and sole of the foot, due to the dirt being retained by the pad and to the partial exclusion of the air, the foot tends to become soft, tender and diseased. Various forms of rubber pads, rubber shoes, rope shoes, fibre shoes and other contrivances to diminish shock and prevent slipping on the hard and slippery pavements of our large cities are in use. They are expensive, but many of them are rather efficient in preventing slipping on paved and cement streets, though not so effective on ice.

WHY FARMERS SHOULD RAISE HORSES

By Lowell Roudebush

Farmers' Institute Lecturer

I know of no better test of any civilization, past or present, than the consideration given the horse, man's most faithful and obedient servant from the earliest time. Enlightened man will always want horses for pleasure and profit.

No farmer should raise a scrub of any kind; no one but a millionaire can afford that luxury. Raising a four-legged animal is not always profitable, even if it is called a horse. Raise horses for your own use; raise them for your neighbors' use; raise them for export to Europe or nearby countries. Raise a horse that is a good individual, that belongs to a class wanted at home or abroad. It is what the other fellow wants, what he thinks of your horse, that gives it a value; not what you may think. Raise horses with certain conditions always present. You must like the horse, must have a good dam or dams — you want a good mother for any animal — and own or have access to a good sire of the same breed; otherwise do not attempt it. The rearing and breeding of horses is a peculiar industry and a matter of fashion. It has and always will have its ups and downs. Do not fear low prices; it is only low quality that hurts. The low price of horses from 1890 to 1900 is not difficult to explain. The number of horses in the United States in 1890 was not large, less than 12,000,000, but the percentage of worthless animals was very large. Each farmer was a law unto himself in breeding. Cayuse or Indian pony mares were mated with mongrel sires, from Shetlands to Percherons. Flea-bitten, ewe-necked, blemished and vicious dams were plentiful, and sires of unknown ancestry and low quality were equally abundant. As a result, the country was full of just horses. Up to 1880 there were two great outlets for these nondescripts, viz., the street cars and livery stables. These two industries required 300,000 head annually, and the death rate of both was enormously large. The street-car horse represented the most worthless class. All the buyer required was that the horse be able to stand on three legs all the time and part of the time on four. He asked no questions as to age, etc. The livery horse was better, but generally balky, with a good leg for kicking and an innate desire to take French leave. With the coming of the cable street car and later, the electric, followed closely by the bicycle craze, when the old farmer rode to town on his wheel to sell his oats, the demand for the street-car horse entirely ceased and the number of livery horses was reduced at least 60 per cent. As a direct result the farmer was overloaded with horses. To this condition importers added fuel to the flame of low prices. Imports of horses from Europe were abnormally large previous to and during this period, while exports were low. Our foreign market was quite small up to 1891, and we were buying more than we sold, and this with overproduction not of numbers, but of low quality and a legion of classes. We now have over 22,000,000 horses in continental United States as compared with 12,000,000 in 1890. The low quality affected the price of all classes, so that even good horses for a time sold for much less than the cost of production.

This depression was not without its compensation. We sold horses at the value of their hides and fertilizing materials; we slaughtered many on the Pacific Coast for human food; we allowed to starve, or gave away when we could, the Indian ponies. Best of all, that great army of worthless sires was castrated and the more worthless dams were not bred. We farmers learned that only a good individual of some well-defined class was profitable to raise, and we began breeding for quality, emphasizing the draft, coach and American-bred trotter. The low price of horses attracted the buyers for the European market. Most of us will buy in the cheapest and sell in the dearest market; sentiment and patriotism cannot compete with commercialism. So it was with the English, German and French.

The farmers of New York can produce a draft or coach horse for much less money than is possible in England, Germany and France, and can place it, not only in the great centers like Liverpool, Bremen and Cherbourg, but on European farms. More than that, these classes can be produced more cheaply in New York than in Ohio, Indiana, Illinois, Kansas or Iowa. Your land is cheaper and a market is at your door. Why let Ohio feeders fatten horses for your farms? Fat is expensive, it covers up so many defects in a horse.

There are a number of valid reasons for raising a draft horse. It requires less intelligence on the part of the farmer; the service fee is low, and with good dams and a sire of quality, 80 per cent. of the offspring will be marketable. The colts will be self-supporting after they are two years old, and less expensive belongings are required to break them than with any other class; after being twice hitched they are ready for the plow or wagon; blemishes count for less. The dams will do the ordinary work of the farm without being injured, as they will not be ridden or driven off a walk. There always has been and always will be a market for drafters, for the farm slogan to-day is, "More horses, fewer men." I well remember harrowing wheat ground in California with a 21-foot spike-toothed harrow to which six horses were hitched abreast. Autotrucks and traction engines will be used where practicable, but the draft horse will never be entirely superseded.

I have emphasized the raising of draft horses without reference to breed. Let me describe a draft horse. It is not the cut-off of fifty years ago, and should not be less than fifteen and three-quarters hands high, sixteen-two would be better; should weight 1,600 pounds and up, you cannot get too much weight, all other things being equal. Color is immaterial, but flat legs with good feet and a straight-away movement are desirable. You do not want a draft or any other kind of a horse to have a side-way movement like a dog. Have box stalls if possible for your draft mares. After the colt is two weeks old and you begin working the mother, keep it in the stall. When it is old enough to eat grain, give wheat bran and crushed oats. Keep it growing. When ready to wean, do not turn it out in the back pasture to be tormented by flies and become homesick; tie it up in the stall nearest its mother and feed it well. In a short time it will be weaned and neither reduced in flesh nor broken in spirit, and will then be a marketable commodity.

Raise a coach horse, if you have the "horse sense," which few farmers really have. There is a rearrangement or adjustment of the classes going on at the present time — the merging of the old-time coach and the up-to-date American-bred trotter, which is now called the American carriage horse. This class of horse will take the place on New York farms of the old-time, general-purpose horse, so popular with farmers fifty years ago. As already indicated, it requires a high order of a certain intelligence to produce this class. Sixty per cent. will be misfits in conformation, style, disposition, movement and size. It will require more expensive blankets, more and better grooming, the farm wagon cannot be utilized so much in their breaking, harness will need more gold, silver or brass on it. In short, they will be more expensive to produce than the drafter, but good individuals will bring a larger sum, and the misfits can be used on the farm to good advantage. A good coach horse should measure fifteen-three to sixteen-one, weigh 1,175 to 1,275 pounds, be of good, solid color with clean limbs and good feet, intelligent, docile, have good action with emphasis on style. These are some of the prominent characteristics of this class. A word of caution — the dam counts for 60 per cent. Do not sell your best mares, they are your foundation for successful breeding. Select your sire with care and judgment and do not go from one breed to another unless you decide you have erred in judgment.

The decadence of the live-stock interests in New England, New Jersey and New York, especially as regards raising horses, sheep and hogs, has been a great detriment to the agriculture of this section of the country, much of which is peculiarly adapted to carrying on this industry. Not all farmers should raise horses, but for the man who loves a horse there are great opportunities. We all have our likes and our dislikes in the handling of our domesticated animals. Study your environment, your outlook, and when they and you agree have the courage of your convictions. Do half as well as you know and you will be surprised at the results.

SOME COMMON DISEASES OF DOMESTIC ANIMALS

By Dr. J. G. Wills

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There are so many ailments of farm live stock that we must necessarily limit our discussion here to a few of the most important and, since the horse and cow are usually the most valuable, it would seem advisable that we consider only the diseases of these two classes of animals.

" The Common Colics of Horses " was taken up in Bulletin 32 of the Department of Agriculture, and further consideration of that condition will be omitted at this time.

First let me strongly recommend that a competent veterinarian be employed when available to treat sick horses or cattle. Failure to call a veterinarian promptly often results in the loss of animals that might otherwise be saved. The administration of medicines by persons having little or no medical knowledge may produce a condition that is more difficult to remedy than the original trouble and often results in losses to the stock owner which might be avoided. If a remedy is given, a sufficient time must elapse to allow its effect to be noted before following with another dose of something else. Drugs may counteract each other, and therefore the common remedies often used may prevent the proper action of medicines afterwards administered. Unless you are positive as to the cause of the trouble and know with certainty what should be done, it is better to avoid giving the animal any internal treatment.

GLANDERS OR FARCY

This is one of the most important infectious diseases of the horse, and is now prevalent in this state, especially in our larger cities. Glanders is due to a specific germ and can only be produced by its introduction and growth in the tissues of the animal. The disease most frequently attacks the lungs, upper air passages and skin. The skin type of the disease is termed farcy, and, while due to the same germ, it has often been supposed to be an entirely different disease. Among domestic animals, glanders is confined largely to the horse and mule, but may be communicated to sheep, goats, rabbits, some of the smaller animals and to man. It is one of the oldest diseases of which we have knowledge. As before stated, it occurs most frequently in the larger cities or where a large number of horses are brought together.

The germ of glanders is largely carried by the lymphatic vessels, therefore, the lymphatic glands are often affected; and it is held by some authorities that diseased areas are always to be found in the lungs if the disease is present in any part of the body. Glanders has been divided into two classes known as acute and chronic, but they are not very distinct in many cases. In the acute form of the disease the animal usually declines very rapidly and may die in a few days after infection, while in the chronic form, animals may live for a considerable time and may never show external evidence of the disease. Chronic glanders may develop into the acute type in some cases. In advanced cases and especially if the disease is located in the upper air passages, a discharge from the nostrils of the affected animal may be noticed, usually of a sticky, glary mucous nature, more or less tinged with blood. The lymphatic glands under the jaw are often enlarged and feel somewhat like a bag of shot. A cough may or may not be present, depending somewhat upon whether the disease is located in the lungs or along the windpipe. In the nose ulcers may appear as raw, irregular sores, which bleed easily. These are particularly noticeable upon the nasal septum or the partition between the two nostrils. In old and chronic cases these ulcers appear as scars with sharply defined edges.

The skin type of the disease, or farcy, usually shows itself upon one or both hind legs, where a pronounced swelling of the limb is the first symptom, followed by an eruption of so-called farcy "buds," varying in size from a pea to an inch in diameter. These farcy buds may also appear upon other parts of the body and are more or less characteristic, being slightly raised from the surrounding skin with a rather depressed or hollowed out center. In the early stages of the disease, they appear more particularly along the lines of the lymphatic vessels upon the inside of the hind legs, usually discharging a grayish or bloody sticky pus, but may heal and reappear from time to time. If the disease is advanced, the animal is usually in a debilitated condition, showing a roughened coat and a general unthrifty appearance.

In cases where the disease is confined to the internal organs, the animal may be in apparently perfect health and show no evidence whatever of anything abnormal, but it is possible that some such cases may be dangerous,.especially those having pulmonary (lung) glanders, owing to the germs escaping into the air passages and from there to the outer air where they may be taken into the bodies of other susceptible animals through food or drink or by other means. The diseased areas in the lung appear as little grayish, glistening particles, varying in size from a mustard seed to a pea, and have a peculiar shot-like feeling when the hand is passed over the surface of the lung. Persistent nasal discharges in the horse are to be looked upon with some suspicion, and, if the animal shows a tendency to rapidly decline in condition with a general unthrifty appearance, it is well to have an examination made by a competent veterinarian. Horses coming from larger cities or shipped from districts where glanders may exist should be carefully watched for symptoms of this disease. An examination of the nasal passages will sometimes disclose old, healed ulcers which should always be looked upon as evidence of glanders, especially if they show an irregular, scar-like edge.

Attempts to cure glanders have not been successful. It is possible that a few animals recover when they are very slightly affected, but in advanced cases killing the animal is the most efficient safeguard. Since badly affected animals are much more liable to spread the disease to healthy horses and because of the unsatisfactory results when curative measures are attempted, slaughter is the most satisfactory disposition of such cases. Persons becoming infected with glanders very seldom, if ever, recover. In New York State the disease is most common in Greater New York. It has been found in some of our smaller cities and occasionally in country districts, but is usually traceable in such outbreaks to diseased animals brought from infected city stables. The disease is spread to healthy animals through the eating of infected food, through the nasal passages and occasionally by direct contact upon the skin. It is probable that the most common means of infection is through the mouth, and therefore the feeding of horses in public feeding troughs, watering from public fountains, the use of public hitching stables, and the tying of animals in blacksmith shops and other places where glandered horses have previously been, is to be avoided, especially in cities or localities where glanders has existed. Individual pails and buckets for feeding and watering animals while upon the street or in the stables is a safeguard against this, as well as other communicable diseases. In case diseased horses have been found in a stable, a thorough and careful disinfection of such premises is necessary. For this purpose a solution of carbolic acid made by adding about six and one-half ounces to a gallon of water or to whitewash is very efficient. Walls, ceiling, floors, etc., should be thoroughly sprayed or scrubbed with this mixture. A common spray pump will be found useful for applying the solution. Any wood used about the mangers or stalls that is removable should be taken out and burned. The purchase of old, worn-out or debilitated horses from cities is one of the principal means by which disease is spread to country districts. There are several methods of diagnosing glanders, but none indicate the extent of the disease in the living animal. While there are many conditions that may resemble glanders in some particulars, such as distemper, bronchitis, diseased teeth and various skin diseases, yet the disease is quite distinctive in many respects, and, if the horse shows enlarged limbs with small running ulcers upon them or upon other parts of the body or unusual nasal discharges, it should be immediately separated from all other horses and kept so until properly examined by a competent person.

AZOTURIA

This disease occurring most often in highly-fed road or draught horses has also been called lumbago, black water, spinal meningitis and various other names. A popular name for it is Monday or holiday disease, so-called because of its occurrence after the horse has stood idle for a day or longer without usual work or exercise.

The cause of azoturia is excessive albumen in the blood, which is supposed to accumulate while the animal is at rest and is not properly disposed of, owing to lack of liver and kidney action. Upon the animal being exercised, the sudden activity in the movement of the highly charged blood produces certain effects upon the muscles, causing partial paralysis, particularly of the loins and back. The disease occurs, as before stated, when the animal is not subjected to usual labor, but has rested for 24 to 48 hours and received the usual stimulating food. It is also attributed to chills and digestive disorders, but is almost always induced by rest.

Symptoms. The first symptom noticed is pronounced stiffness of the hind limbs, which often makes its appearance before the animal has gone more than two or three hundred yards. A knuckling or crouching attitude in traveling is shown, with pronounced tenderness over the loins and back. The pulse and breathing are increased, and evidence of pain is shown by the trembling body, heaving flanks and perspiration. Patches of sweat appear upon different parts of the body, and the muscles over the hips are in a hard, tense, contracted condition. If the animal is not immediately stopped when the first symptoms are noticed, the paralysis of the rear limbs becomes pronounced and the animal usually falls. The conditions preceding the illness, together with the characteristics already mentioned, will often be sufficient to positively diagnose the trouble.

Treatment. The treatment of this condition is comparatively simple if begun immediately. Rest is one of the most necessary requirements. The animal should immediately be stopped when the first symptoms are noticed and a veterinarian called. The extraction of large quantities of blood from the jugular vein, 6 to 8 quarts, is an old remedy and still used. Friction of the limbs and hot applications over the loins and hips assist the circulatory system in carrying off the excess of accumulated blood. Purgatives are also of value and large quantities of water are advised. Should the animal be down, the case becomes more serious and stimulants, such as whiskey in small doses well diluted and given frequently, may be administered. Great care should be taken in feeding horses which have once suffered from azoturia since there is a tendency to its recurrence. Daily exercise, if the animal is accustomed to it, should be given; and should it be found that for any reason a horse accustomed to hard labor is to stand for a day or longer, he should be given some moderate exercise and his food reduced according to the work performed. Laxatives, such as a handful of Epsom salts or a teacupful of raw linseed oil, given in the feed once a week is of assistance in keeping the digestive organs in an active condition. Saltpeter in ounce doses once or twice a week regulates and stimulates the circulatory and urinary systems, thereby preventing the accumulation of undesirable material in the body.

IMPACTION

In the cow we have a number of ailments which are due to improper feeding or other disturbances affecting the digestive organs. A condition in cattle occurring especially in the winter or late spring is what is commonly termed dry murrain, fardel-bound or impaction of the maniplies. This is a form of indigestion due to an accumulation of food in the third stomach and may be caused by an excess of woody, dry, indigestible material, or by some other condition which interferes with the normal passage of food through that stomach. The third stomach of the cow is a peculiarly constructed organ, practically filled with leaf-like folds of mucous membrane through which the food passes and is there subjected to a shredding or macerating process. It is quite essential that the food be in a moistened condition to pass through this organ, and, if for any reason the conditions are unfavorable, a stoppage of the alimentary canal at this point may result.

Symptoms. The symptoms exhibited are more or less dullness and depression of the animal, lack of appetite and a general unthrifty appearance noticeable several days before any pronounced unnatural conditions appear. Constipation is nearly always present, but sometimes a slight diarrhea may be noticed. The nose is hot and dry and there are often watery discharges from the eye. Bloating is a frequent symptom, also a decrease of milk secretion if the animal is milking. When the conditions become quite pronounced, the third stomach may be felt as a hard, compact body upon pressure on the left flank, and evidences of pain may be noticed if the animal is struck or pressed over this region; the pulse and breathing is much increased and the animal may grunt or moan at regular intervals. Bloating may occur in conditions of this kind and the appetite and rumination (chewing the cud) cease. If relief is not given, the animal gradually grows worse and sinks into a stupor or becomes delirious, death soon resulting.

Treatment. Removal of the accumulated material in the third stomach is the principal necessity. This may be accomplished in the early stages of the disease by giving large doses of purgatives, such as Epsom salts, a pound to two pounds dissolved in a large quantity of water. The use of Croton oil was formerly advised, but owing to its being a very powerful drug it is dangerous to use. Large quantities of water will sometimes assist in softening the contents of the alimentary canal, thereby aiding in the removal of the obstruction. The greater delay after the condition is noticed, the more difficulty in reaching the trouble, owing to the inflammation which follows and consequent drying and hardening of the contained material. Stimulants, such as a half teacupful of aromatic spirits of ammonia, or one-fourth pint of whiskey, diluted with large quantities of water, may be of assistance if the animal shows weakness. The use of ginger, in either fluid or powder form, and well diluted, may stop the pain to some extent. This condition, owing to its chronic nature, requires persistent treatment, and animals may recover after being ill for several days or even weeks. The most effective prevention consists in keeping the contents of the stomachs in a more fluid condition by the use of occasional laxatives and by having before the animals a sufficient quantity of water to properly supply them at all times. Salt given frequently will often encourage the drinking of water, and impaction will seldom occur if this procedure is followed.

HOVEN OR BLOAT

This condition is caused by the formation of gases in the first stomach of the cow, due to fermentation of the contents of that organ. Its cause is usually the eating of frozen food, ensilage, partly decayed vegetables, damp, moist clover or corn or excessive quantities of other stimulating foods. It may result from choke due to the gases formed in the stomach and unable to escape, and occasionally from chronic constipation or obstructions due to growths in the intestines or stomach. It generally occurs in the autumn or during rainy, damp weather when the animal has an opportunity to eat foods already mentioned and is therefore especially common when the cattle are turned upon clover or aftergrass late in the fall.

Symptoms. The symptoms in this trouble are a pronounced increase in the size of the abdomen of the animal due to the retained gases, difficult breathing because of the pressure upon the lungs and a general depressed appearance. The animal, as a rule, stands quietly; the breathing may be accompanied by audible grunts due to the pressure upon the lungs; the pulse is usually increased, and there is more or less evidence of pain as the disease progresses. Rupture of the diaphragm, intestines or stomach may occur from pressure. A pronounced drum-like sound over the left flank is noticed upon tapping upon that part of the body. The fact that the animal has had access to large quantities of food and its general appearance are quite positive evidence of the cause of the trouble.

Treatment. Prompt relief must be given in cases of bloat, or death may result, due to strangulation because of the pressure upon the lungs. The escape of the retaining gases must be provided for, and this may be accomplished by the use of the stomach tube by the veterinarian. The introduction into the first stomach of antiferments, such as oil of turpentine, 2 ounces (½ teacupful) in a pint of raw oil, or 2 ounces of aromatic spirits of ammonia, given well diluted in water, may check the formation of further gas and thus give relief. Should it be impossible to relieve the animal in this way, puncture of the stomach by means of an instrument called a trocar may be necessary. This is a tube-like metal cylinder the size of a lead pencil, with a sharp stilet which is removable, both being pushed through the wall of the flank into the stomach and the stilet withdrawn, leaving the tube in place, through which the gases escape. Antiferments may be forced into the stomach through this tube. Care should be taken in attempting to drench cattle suffering from bloat, as they are often unable to swallow, and liquids may pass into the lungs and produce strangulation or pneumonia. Recovery from this trouble is usually quite rapid, but great care should be used in feeding animals that have had an attack, and stimulating food given only in moderate quantities for a time. Animals disposed to gorge themselves with excessive quantities of food when allowed to do so, should be prevented from having opportunity to eat as much as they wish. When such animals are fed succulent food, such as green corn, after-grass, clover, etc., they should not be allowed to eat large quantities. In this as in many other conditions, prevention is very easy and will often avoid losses which would otherwise occur.

MILK FEVER OR PARTURIENT APOPLEXY

This, until a few years ago, was one of the most fatal diseases affecting the dairy cow. Curative measures were seldom successful, and, owing to the disease usually affecting the largest and best milking animals, the loss was great. As a rule, it is not found except after the birth of the third to fifth calf and does not often occur except when animals are kept housed and fed upon large quantities of rich, concentrated or very nourishing foods. It occurs generally in 12 to 48 hours after easy calving, but occasionally cases have been noticed prior to calving, and instances are recorded where the disease appeared several days or even weeks after.

Symptoms. The first indication of anything abnormal is uneasiness on the part of the animal with more or less dullness or evidence of pain. The animal usually lies down early in the attack with the head turned to the side and appears in a sleepy or drowsy condition. Sometimes the disease produces violent symptoms, and the animal may injure itself or attendants. The disease is usually rapid in its progress and death often results very shortly. In other cases, the animal lies in an apparently dying condition for hours. One of the most striking characteristics of this disease is the fact that the temperature is below normal, the breathing usually labored, and in many cases bloating and constipation are noticed. The milk flow is always decreased. Paralysis of the back and limbs is an early symptom, and animals are often unable to stand and have no control over the limbs.

Treatment. The modern treatment of this disease is by inflating the udder with gas, either common air or oxygen, which is prepared and furnished in small metal tanks under pressure. This method of treatment is almost invariably successful unless the disease has been allowed to progress too far, and even then animals will again get upon their feet after treatment when there is apparently no hope of recovery. Various methods of inflating the udder have been devised. A common milking tube connected with an oxygen gas tank by means of small rubber tubing will be found very satisfactory. These gas tanks are of small size and may be procured especially for this purpose. For ordinary use, however, and where a gas tank is not available a common bicycle pump will be found satisfactory. The advantage in using pure oxygen is due to its being free from germs and consequently little danger of inflammation later. The use of liquids was formerly advised, but it has been found that a gas was as efficient, much more easily introduced, with less danger of producing inflammation. Owners of dairy animals may provide themselves with a milk-fever outfit at a reasonable cost, but it is always desirable that a veterinarian be called, especially if the cow is valuable, since great care should be observed in treatment and thorough sterilization of instruments is very necessary to avoid unpleasant results later. If common air is used, it should be filtered through a pledget of absorbent cotton in order to prevent the introduction of germs into the udder. As a rule, one inflation is sufficient, although in some cases more are necessary. The administration of drenches to cows suffering from milk fever should be avoided, as the throat is usually paralyzed and an animal may be strangled by fluids passing into the lungs. Great care should be observed in feeding cows recovering from an attack, and stimulants may be necessary to put the animal in proper condition. There is a tendency to the recurrence of the disease in highly-fed animals, and therefore, when near freshening great care should be taken with all cows that are especially heavy milkers. The use of laxative foods prior to calving will often be of assistance in preventing attacks. The animal should be kept away from draughts and chilling should be avoided. Frequent milking and the application to the udder of stimulating liniments, such as camphorated oil, arnica, etc., will assist in restoring the normal milk flow.

DEMONSTRATION OF BOVINE TUBERCULOSIS

By Dr. J. F. DeVine

Consulting Veterinarian, Department of Agriculture

A special feature of the Greenwich Farmers' Days was the tuberculosis demonstration on Wednesday, March 20, 1912. This followed a lecture on the nature and control of bovine tuberculosis, including an explanation of the tuberculin test, its advantages and limitations. The demonstration took place at the fine dairy stable of Dr. Henry Grey.

About two weeks before, Dr. Grey had requested the State Department of Agriculture to tuberculin test his herd, which consisted of as fine looking cattle as could be found assembled in one place in New York State. The test was applied to the entire herd. In order to demonstrate its accuracy, some of the finest appearing animals that had reacted were slaughtered, and an autopsy held in the presence of the audience.

The accompanying photographs give an idea of the appearance of the animals before slaughtering and the post-mortem findings.

Figure 52 shows a dairy cow, fat, sleek and to all external appearances perfectly healthy. This animal reacted to the tuberculin test. The post-mortem showed the glands between the lungs to be enlarged about fifty times the normal size, owing to the tissues being filled with tubercular material. (See Fig. 53.)

The cow in Figure 54 was selected at random from the group reacting to the test. She seemed in the best condition. When slaughtered, the lungs were found full of tubercular abscesses, as shown in Figure 55.

DISCUSSION

Question.— Will localized cases of tuberculosis spread the disease?

Answer.— Only by contact with the germ of tuberculosis. Animals that live in dark and unclean stables when exposed are, from their general condition, more susceptible than those kept under good conditions.

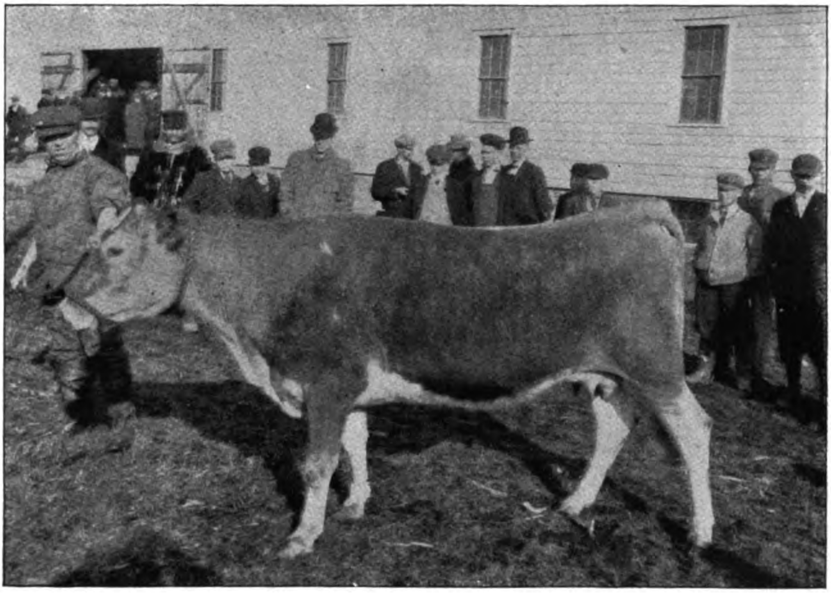


Fig. 52.—A Fine-looking Guernsey.

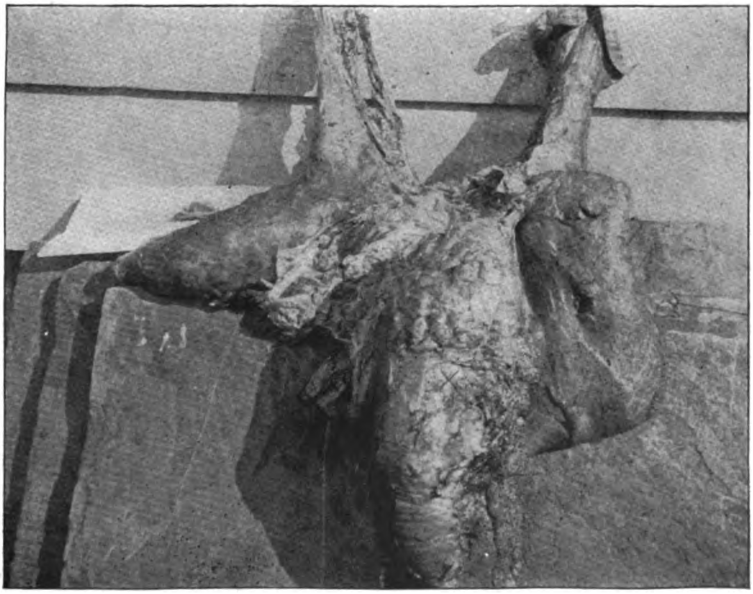


Fig. 53.— Lungs of Tuberculous Cow Shown Above.

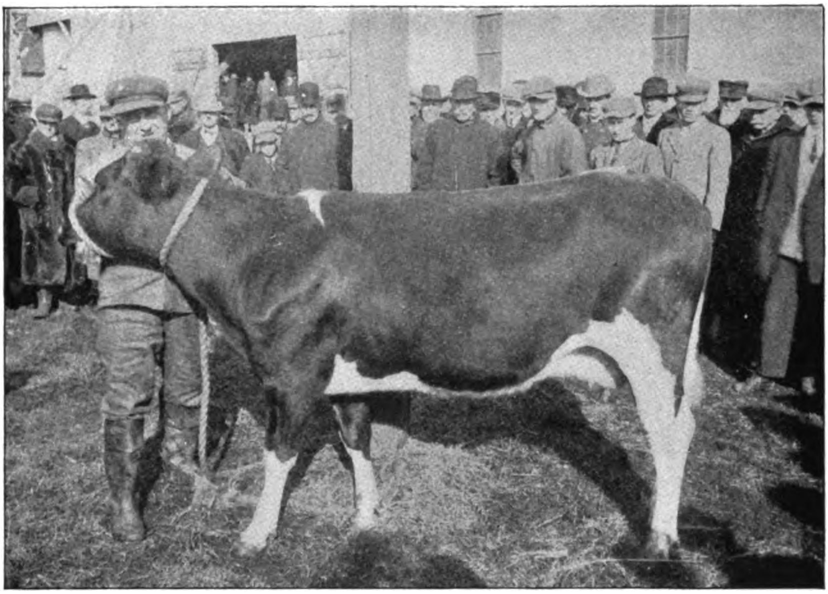


FIG. 54.—A DAIRY COW OF HEALTHY APPEARANCE.

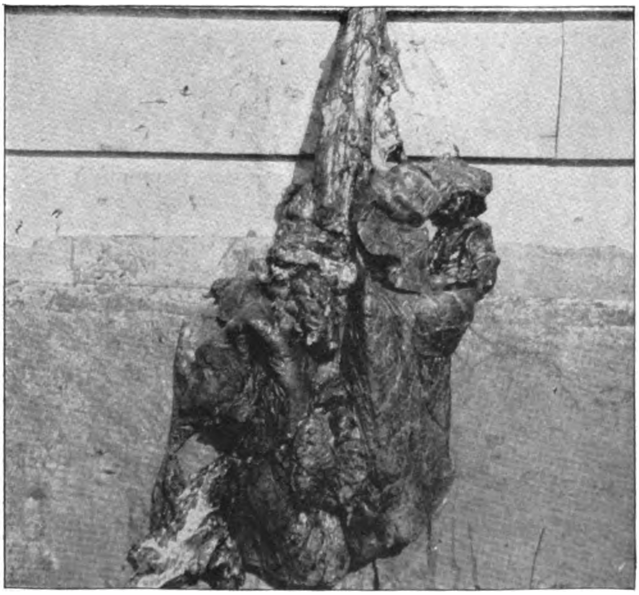


FIG. 55.— TUBERCULAR ABSCESSES IN LUNGS OF INFECTED COW.

Question.— Is it not a fact that there is more tuberculosis to-day than ever before?

Answer.— It may be so, at least we are hearing more of it. The heavy feeding, close housing and careless ventilation that we have given animals in the past has had much to do with spreading the disease. Interchange of cattle has also been a factor in spreading the disease. Many persons have purchased tuberculous cattle from dealers, which being placed in herds not diseased have communicated tuberculosis to whole herds. I know of one instance where a drover distributed 18 diseased animals among 11 buyers.

Question.— Is it true that more cases are found in fancy stables than in others?

Answer.— We have found a large percentage of diseased cattle in pure-bred herds, due, perhaps, to more traffic in pure-bred stock.

Question.— Has silage anything to do with bovine tuberculosis?

Answer.— No.

Question.— In what way is the disease communicated in a herd?

Answer.— By inhalation and by means of food. Some of the excreted refuse, drying, is taken into the lungs, and when the excretion is from the nostrils or mouth it is easily brushed along the feeding troughs and taken up with food.

Question.— At what stage would the milk become infected?

Answer.— That would depend almost entirely on the location and character of the lesions. If the disease was located in the mammary glands, millions of the organisms might be given off in the milk. Again, there might be lesions in other glands which would not affect the milk.

Question.— Is any one breed more subject to the disease than another?

Answer.— No.

Question.— Is a calf a month old subject to the disease?

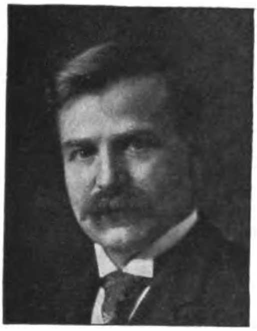
Answer.— Yes. Any calf given a few feedings of tuberculous milk may react within a year or two.

Question.— Would breeding from diseased animals increase the disease?

Answer.— Any weakness may be transferred to the offspring. If the sire and dam are both diseased the offspring would be more susceptible; however, if you remove the calves from the cows and see that their milk supply is not contaminated with tuberculosis, you can raise them in safety.

METHODS OF INCREASING PRODUCTION AND IMPROVING THE QUALITY OF EGGS

By James E. Rice
Professor of Poultry Husbandry, Cornell University



Profitable egg production is a question having to do with the quality as well as the quantity of eggs that hens lay. It implies getting maximum returns from the sale of eggs, less the cost of food, labor and fixed charges, or in other words, the *net* profit. *Net profit* can only be determined by *final* results, which in turn can only be known after a term of years. The only profitable poultry husbandry is the kind that endures. The only enduring poultry farming is where the fowls after giving us maximum returns for at least two years are salable. In order to endure we must practice methods of breeding, feeding and care that will secure vigorous, virile stock capable of high production, and that will produce chickens as strong or stronger than the parents. We must so hatch and rear the young that they will have constitutional vigor and the inherited tendency to lay. This we can secure only by proper methods of breeding, feeding and care. The whole problem of profitable production, therefore, hinges on a number of exceedingly important factors, as yield, quality and cost.

I take as my text a phenomenal hen, "Lady Cornell," as indicating the "high-water mark" of production. By taking a living example of a wonderful performance (the greatest, so far as I know, that has ever occured at any of the experiment stations) and considering the methods by which she has been handled, possibly we can draw some lessons that will be of value.

The true test of a method of handling poultry must always be the net results that we can secure with large numbers of fowls, not by pointing to the highest producer. We must base our calcula-

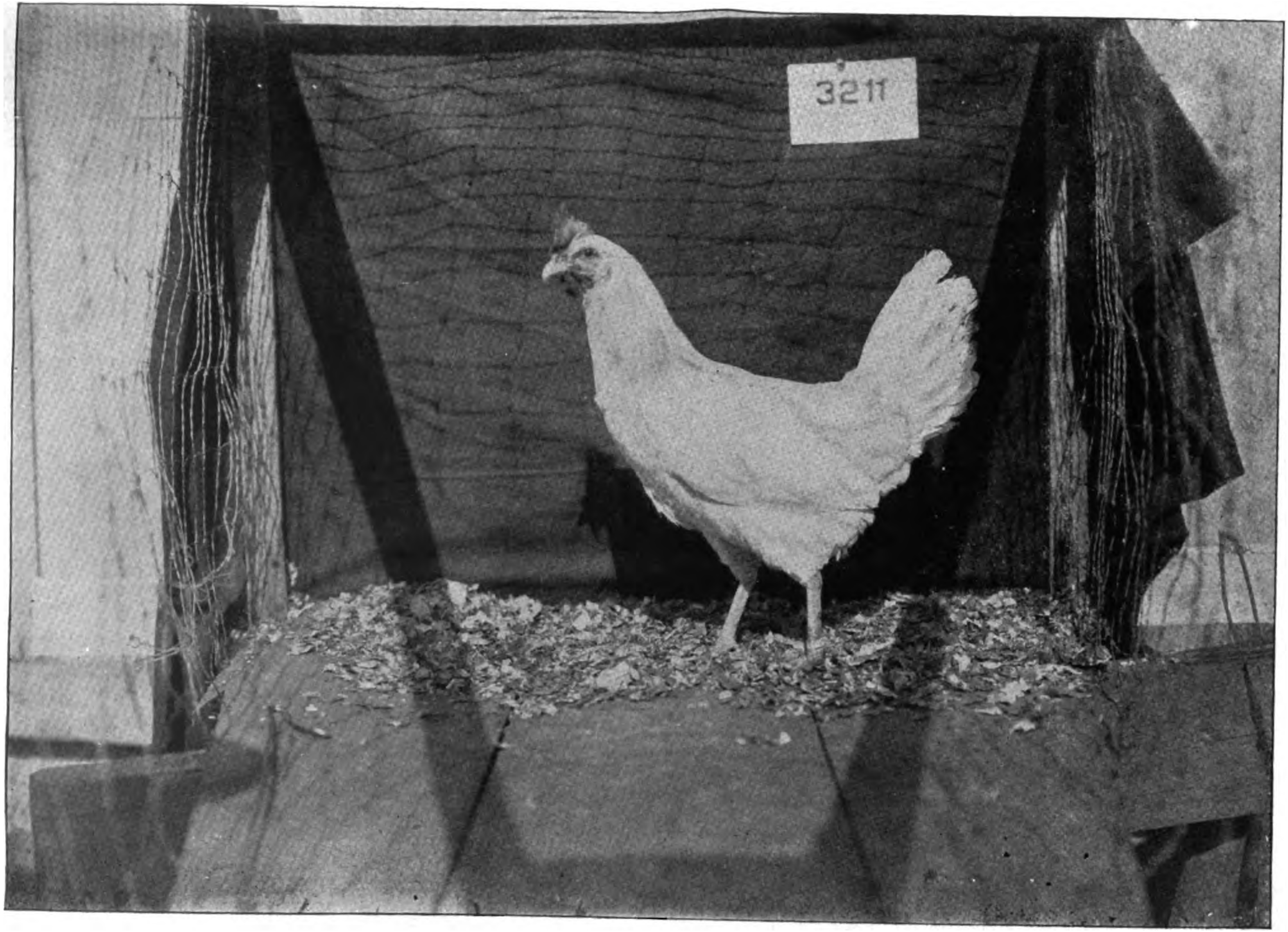


Fig. 56.— Lady Cornell.

tions upon the high general average of the flock. Therefore, my using this exceptional hen at this time as an illustration, is not for the purpose of leading people to think that such hens are the rule, or that they are easy to secure, or that many farmers or poultrymen are likely to produce them; but it is to point out the fact that if this hen had not inherited these tendencies to lay, if she had not been fed carefully and housed properly, she could not have made this wonderful record. I will introduce to you now "Lady Cornell" (Fig. 56). Here are the eggs that she laid (Fig. 57) and the food that she ate (Fig. 58). A financial statement is given below.

TABLE I.

	Debit	Credit
Food consumed	$1.66	....
Labor	.75	....
Interest on investment	.25	....
Value of eggs laid, 257 at $.35 per doz.	......	$7.50
Seventy-three pounds manure	......	.29
	$2.66	$7.79
Net profit, not counting depreciation in value of hen....	......	$5.23

Lady Cornell is a little hen weighing only 3.2 pounds. She laid 257 eggs the first year, having a total weight of 29½ pounds, which, as you will see, is 9.2 pounds of eggs for each pound of live weight. When we figure on her performance in comparison with that of a high-producing cow, the record is even more surprising. Dr. Jordan compared a Leghorn hen with a dairy cow weighing one thousand pounds and producing 7,000 pounds of milk, containing 400 pounds of butter fat. Comparing this cow with the hen weighing 3½ pounds and producing 200 eggs per year, it was found that the hen consumed 2½ times more dry matter per pound live weight than did the cow. Now, taking Lady Cornell we find that she has given us results that are considerably larger than the ones quoted from Dr. Jordan. It is estimated that she has in her body 1.41 pounds of dry matter. She consumed food containing 88.1 pounds of dry matter and produced eggs containing 10.11 pounds of dry matter, or 7.17 pounds for each pound of dry matter in her body. You can see, therefore, what tremendous consumption, assimilation and manufacture has been going on inside of this little 3.2-pound hen. That is not all. She not only laid 257 eggs her first year, but 200 eggs in her second year — a total of 457 eggs in two years. One of her companions, "Madam Cornell," laid 245 eggs in her first year and 130 eggs in her second year, making 375 in two years, these eggs weighing 46.8 pounds, which is almost equal to the high performance of the hen that you see here.

This illustration is given to emphasize the fact that we must produce hens having a strong constitution, large capacity to eat, a natural tendency to lay and possessing the power to transmit to future generations these same qualities. The domestic fowl unquestionably is developing toward larger and larger production. To have consumed 110 pounds of food made up of the cracked grain, ground feed, beets, green cut bone, and in addition to this a large amount of grit, and oyster shells (Fig. 58), was a great feat.

HOW AN EGG IS MADE

Before taking up the specific problems of breeding or of feeding this Lady Cornell, there are a few principles in regard to the anatomy of a hen, her ovarian development, etc., that must be taken into consideration. We must realize that in the production of eggs we are dealing with the combined functions of reproduction and food secretion. The hen, in effect, reproduces nearly every day or whenever she lays an egg. This, however, is not wholly comparable to reproduction in other domestic animals. Nevertheless, within the egg which has been properly fertilized, there has been developed life and a secretion deposited to support that life after it has left the body of the hen in the form of the egg. We must so breed and so handle the hen that she will be born with a disposition to lay, and then we must so feed her that she will function normally, that is to say, so that she will develop the ovum, the yolk of the egg, secrete the white of the egg (the albumen to nourish the embryo), and secrete mineral matter to make the shell to protect it (Fig. 61). The reason why special attention is called to the ovarian development of hens and the formation of the egg proper is that it has been discovered that every normal hen has within her body at birth from 1,500 to 3,000 ova[1] (Fig. 59). Hens differ very largely in their

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[1] Dr. Raymond Pearl and others.

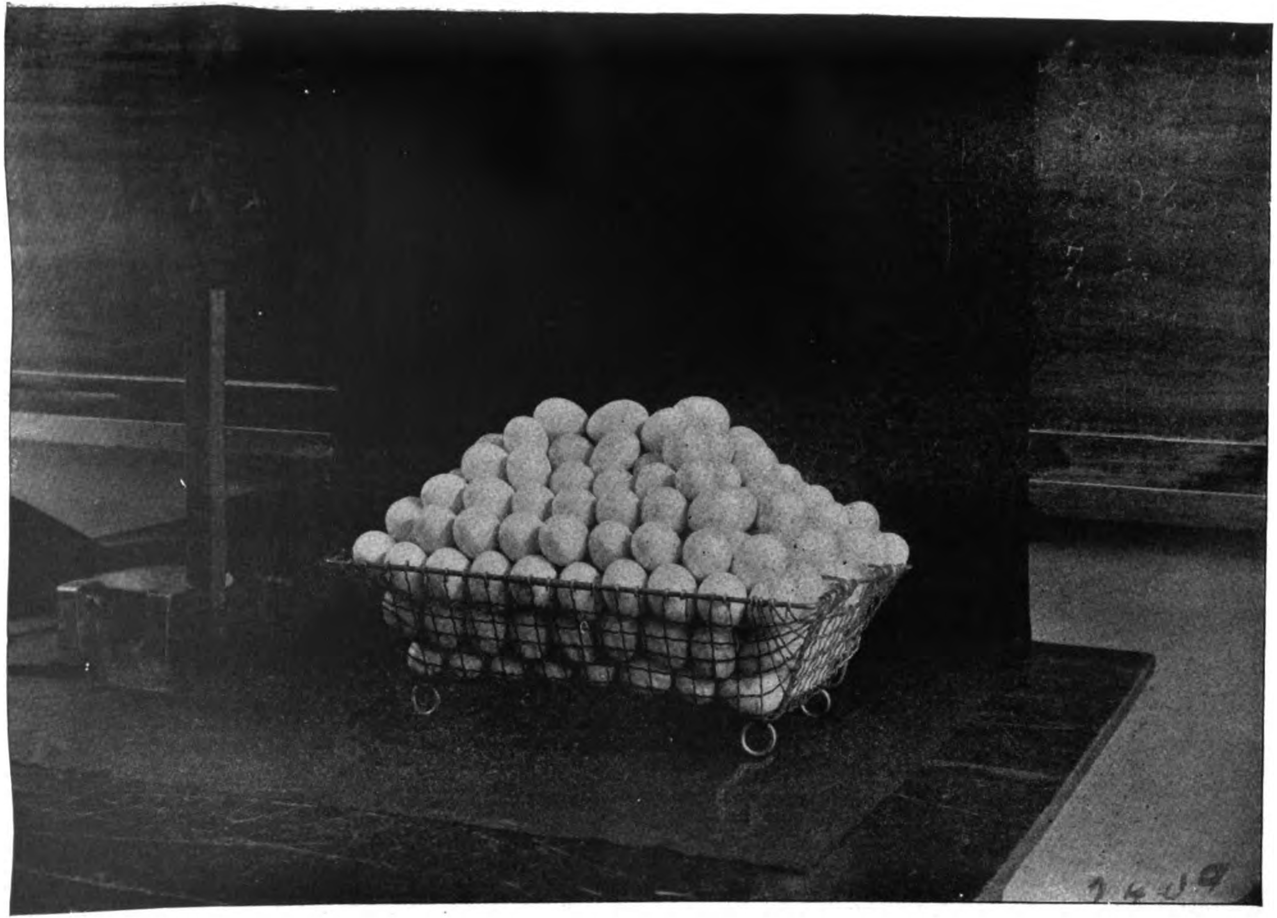


FIG. 57.— EGGS LAID BY LADY CORNELL.
The 257 eggs weighed 29½ pounds.

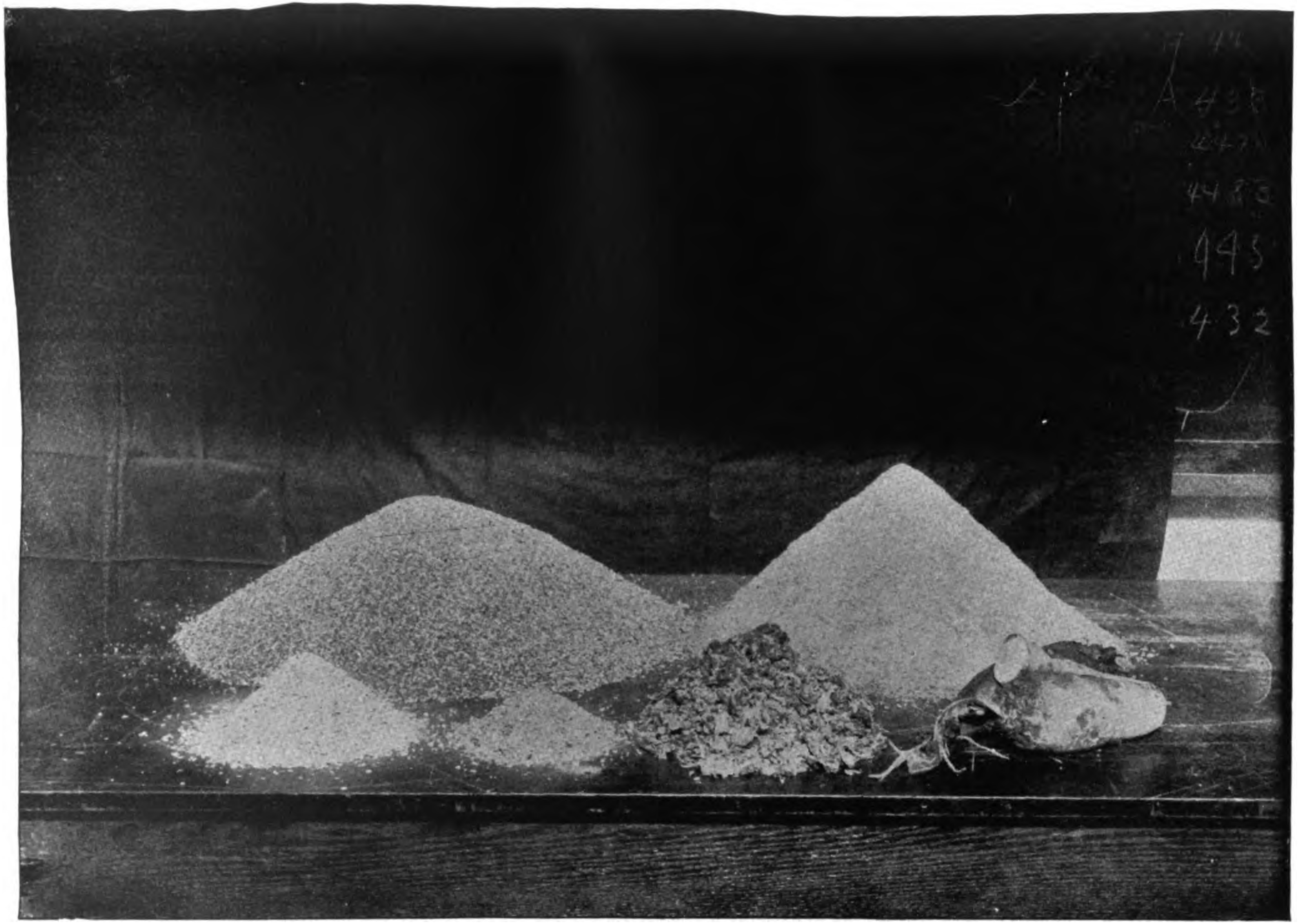


FIG. 58.— FOOD EATEN BY LADY CORNELL.
Weighing 110 pounds, costing $1.66.

ability to develop these ova, some having a natural inherited tendency to develop the ova rather than to use their food to grow muscle and fat, while other hens naturally grow muscle and fat instead of eggs.

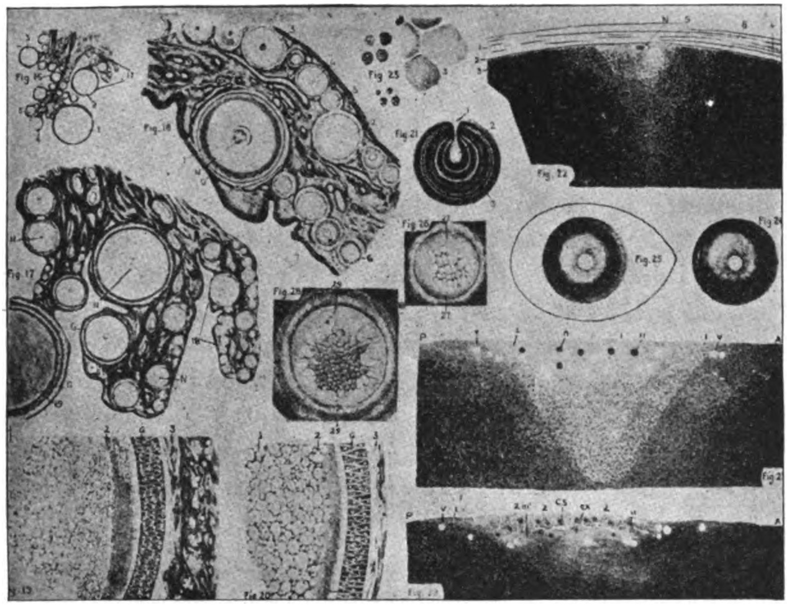


FIG. 59.— CROSS SECTION OF OVARIAN TISSUE OF A FOWL, SHOWING OVA IN VARIOUS STAGES OF DEVELOPMENT.

Apparently there are a number of principles involved in the development of the ova, which have to do with (1) environment, (2) nourishment, (3) inheritance. A hen must be congenial and happy to function properly. She must have the available nourishment right on hand and stored up as surplus in her body to lay many eggs, and she must have an inherited tendency to develop the ova in order to become a high producer. The experiments that I am going to speak of will have to do with these three factors, the environment, the food supply and the method of breeding, in order to get the maximum results in egg production.

ENVIRONMENT FREQUENTLY A DECIDING FACTOR IN PRODUCTION

The hen is probably even more susceptible to climatic changes, to fright, to unfavorable changes in diet, etc., than is the dairy cow. If the hen is functioning properly and is laying an egg every day or every other day continuously, and if something should be wrong in her environmental conditions or her food supply, she does not simply stop laying and wait for the unfavorable conditions to disappear; but if her body needs nourishment, because of lack of proper food, or if she suffers from excessive heat or cold, or because of fright or suffering or for some other reason, the ova may be reabsorbed into the body, and thus the hen, who would have gone on laying an egg every day or every other day when they are selling for fifty or sixty cents a dozen, will not only stop laying, but will draw back into her body and use the stored-up nourishment in the ova as so much food, using for body maintenance what otherwise might have become valuable eggs. We must realize that if we are to secure high performance with hens, it must be as a result of the application of the same skill in feeding and breeding, as in the case of the wonderful performance of great dairy cows or trotting horses. This is illustrated by the daily egg record for two years of Lady Cornell (Fig. 60). The black spaces

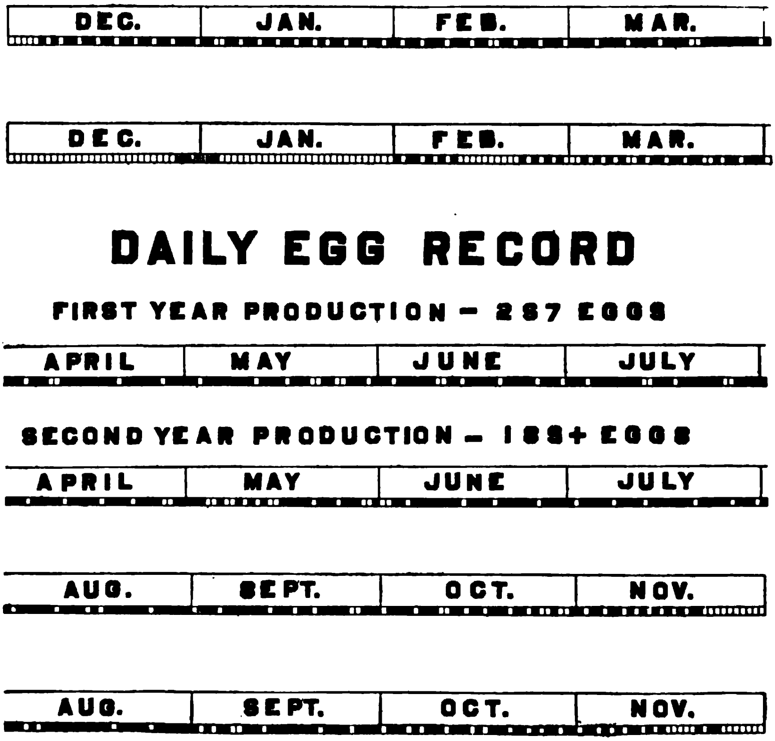


FIG. 60.—LADY CORNELL'S EGG RECORD.

indicate the days she laid and the white spaces the days she did not lay. Every month, beginning with December and continuing through the first year, as shown on the upper line, and throughout her second year, as indicated on the lower line, you will see how perfectly and uniformly she functioned. For two or three months in the year she missed only five or six days of laying each month. She began to molt the last of November and molted through December and January and then began to lay and continued to lay right up to the present time. She laid and molted at the same time during a portion of her molt, which is very unusual.

A WELL-BALANCED RATION PROPERLY FED IS ESSENTIAL

The method of feeding Lady Cornell and the other fowls at the College plant is as follows:

CORNELL RATION FOR LAYING HENS

The following whole grain mixture is fed morning and afternoon in a straw litter:

BY WEIGHT Winter		BY MEASURE Winter	
Wheat	60 lbs.	Wheat	32 qts.
Corn	60 lbs.	Corn	36 qts.
Oats	30 lbs.	Oats	30 qts.
Buckwheat	30 lbs.	Buckwheat	20 qts.

BY WEIGHT Summer		BY MEASURE Summer	
Wheat	60 lbs.	Wheat	32 qts.
Corn	60 lbs.	Corn	36 qts.
Oats	30 lbs.	Oats	30 qts.

The following mash is fed dry in a hopper kept open during the *afternoon only:*

BY WEIGHT Winter and summer		BY MEASURE Winter and summer	
Corn-meal	60 lbs.	Corn-meal	57 qts.
Wheat middlings	60 lbs.	Wheat middlings	71 qts.
Wheat bran	30 lbs.	Wheat bran	57 qts.
Alfalfa meal	10 lbs.	Alfalfa meal	20 qts.
Oil meal	10 lbs.	Oil meal	8 qts.
Beef scrap	50 lbs.	Beef scrap	43 qts.
Salt	1 lb.	Salt	½ qt.

The fowls should eat about one-half as much mash by weight as whole grain. Regulate the proportion of grain and ground feed by giving a light feeding of grain at the morning and about all they will consume at the afternoon feeding (in time to find grain before dark). In the case of pullets or fowls in heavy laying, restrict both night and morning feeding to induce heavy eating of dry mash, especially in the case of hens. This ration should be supplemented with beets, cabbage, sprouted oats, green clover or other succulent food, unless running on a grass-covered range. Grit, cracked oyster shell, bone and charcoal should be accessible at all times. Green food should not be fed in a frozen condition. All feed and litter used should be strictly sweet, clean and free from mustiness, mold or decay. Serious losses frequently occur from disease, due to the fowls taking into their bodies, through the intestinal tract or lungs, the spores of the fungus causing molds.

RESULTS AT CORNELL, 1909–10 — TWELVE MONTHS' RECORD

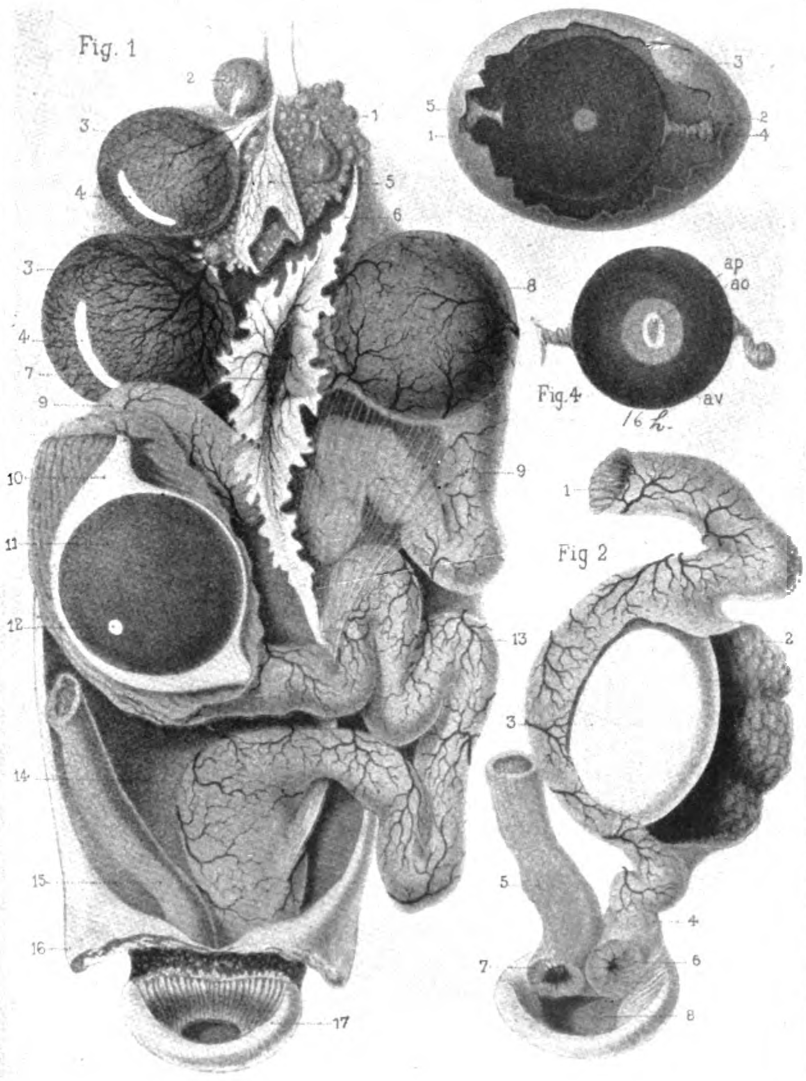
Best pullet laid	257 eggs
Next pullet laid	245 eggs
Fifteen highest producing pullets averaged	236 eggs each
Best single-flock pullets averaged	182 eggs each

WHAT CONSTITUTES A WELL-BALANCED RATION

A few principles in the feeding of fowls must always be taken into consideration. One of these is the importance of feeding a balanced ration. While it is true that we do not know the digestible coefficients of foods for poultry, they having never been worked out for fowls as they have been for other kinds of live stock, we assume for sake of comparison that the digestibility for poultry foods is approximately the same as we have them for other kinds of animals. We must do this, even though it is at best only an approximation, if we are to compare foods and attempt to balance the ration. We find that the Cornell ration has a nutritive ratio of 1 to 4.6, which is a little narrower than that for the modern dairy cow.

THE PROPORTION OF GRAIN TO GROUND FEED IS IMPORTANT

There is one important point, almost completely ignored by persons who feed fowls, in connection with the feeding of this ration or any other, that always must be taken into consideration if we are to balance a ration properly. The point is, that in order to balance properly any ration, the fowls should consume a proper proportion of the grain and the ground feed. You will notice that



Mathias Duval del

FIG. 61.—THE OVIDUCT OF A LAYING HEN.

(1) Ovary with ovules in various stages of development and empty follicles; (2) the egg in the process of development.

the ration is made up of two groups or mixtures of feeds, one of grain and the other of ground food. The ground food is fed in the hopper dry, where the fowls can get it whenever they want it during the afternoon. The grain is fed night and morning in a litter and is so fed and the hens' appetites are kept in such a condition of hunger that they will ordinarily eat about two pounds of grain a day to each pound of ground food; that is to say, about two-thirds grain to one-third ground food which should contain a liberal allowance of meat.

Assuming that we figure the Cornell formula on a basis of two-thirds grain and one-third ground food, we have a nutritive ratio of 1 to 4.7; figuring half ground food and half grain, we have a nutritive ratio of 1 to 3.7; figuring the nutritive ratio again of one-third grain and two-thirds ground feed, it is 1 to 3. The ground feed, because it contains a large amount of beef scrap is very narrow; the grain mixture is wide. Grains of all kinds are wide in their nutritive ratio with the exception of peas; therefore, a person who is to feed this or any other ration, where both the ground feed, the grain and the meat are fed, must take into consideration the proportions of the two mixtures. The hens must be encouraged by restricting the grain so that they will eat at least one-third ground feed containing meat in the ration.

HOW MUCH TO FEED

Another important point to emphasize in feeding is that there should be a supply of food available up to the limit of a hen's capacity to eat, so that the high-productive hen shall not suffer for lack of something to eat. The method of dry feeding in a hopper makes it possible for the hen to do what she wants to do, that is, " to eat between meals " so to speak. Formerly in wet mash feeding, the amount hens could eat depended upon the good or bad judgment of the person who fed. For the person who will watch his hens and feed each day just what grain they need to keep the appetite right and the hens happy and busy, the dry feed hopper not only insures against underfeeding but also saves time. It allows the hens to go to the " pantry " and get something to eat whenever they wish to do so, that is, whenever the demand for food to make eggs requires it. The hen knows what she needs and she must have it.

HENS MUST HAVE FAT IN THEIR BODIES TO LAY WELL.

The proper physical condition of the hen is an important point that needs to be taken into consideration. We must give a hen all she will eat of the right kinds of food so that she may have surplus energy in the form of fat. Years of experience proves this to be true. More people underfeed than overfeed their hens. The hen must be fed, not only a ration having the correct nutritive ratio, but must be fed the right quantity, so that she will carry some surplus fat in her body. The "dry matter" of the ova (yolk of the egg) is sixty-four per cent. fat and is practically the only fat within the egg. Apparently a hen cannot function properly unless she has surplus fat in her body to put into the ova. A large number of hens which we have examined bear out the accuracy of this statement. Our figures show that the weight of a hen in the fall frequently is the same as the weight that she started with the year before, and generally is not more than ¼ to ½ pound heavier, if at all. The same is true of the pullets. If they are early hatched and well cared for, they will weigh, after one year's heavy laying, only 15 to 20 per cent. more than they did when they started. Apparently they make their growth mostly during their periods of rest. This is clearly shown in the following table which includes the average weights of the hens in eighteen flocks, at the beginning of the laying year (about November 1, 1909) and their average weights at the close of the laying year about November 1, 1910.

TABLE II

Pen number	Average weight at start	Average weight at end	Gain	Loss
76. Hens 2 years	3.5	3.6	.1	...
77. Hens 2 years	3.1	3.3	.2	...
69. Pullets	2.61	3.19	.58	...
70. Pullets	2.52	3.09	.57	...
71. Pullets	3.48	3.50	.02	...
72. Pullets	4.24	4.74	.50	...
73. Pullets	5.49	6.08	.59	...
74. Pullets	3.87	4.33	.46	...
28A. Pullets	2.78	3.63	.85	...
28B. Pullets	2.69	3.56	.87	...
32. Pullets	3.38	3.35	...	.03
33. Hens 2 years	3.78	3.90	.12	...
78. Pullets	3.38	3.54	.16	...
79. Hens 2 years	3.78	3.77	...	.01
30. Hens 2 years	3.28	3.43	.15	...

MINERAL MATTER IS AS IMPORTANT AS PROTEIN OR CARBOHYDRATES

We would emphasize the fact that we must feed lime in the form of oyster shells and also in the form of bone meal, granulated bone or green cut bone, so that the fowls will have an available supply of mineral nutrients as well as the protein and carbohydrates that in the past we emphasized as being of chief importance. We cannot get our best result in any event, unless the fowls have the mineral nutrients in abundance.

BREEDING TO IMPROVE THE QUALITY OF EGGS BY SELECTING EGGS FOR HATCHING

The greatest improvement and quickest results may be secured by breeding to improve the quality of eggs. Mr. Benjamin, instructor in the poultry department, has started a three years' experiment to develop nine strains of Leghorns each laying a different kind of egg, that is, eggs of three different sizes, little, medium and big eggs; heavily tinted, slightly tinted, white eggs, and eggs of three different shapes, long, round and perfect. We have found that the size of the chick and the fowl is determined within a breed by the size of the egg from which it was hatched.

TABLE III

WEIGHT OF EGG TO WEIGHT OF CHICKEN

Eggs	Average weight of eggs	Per cent. weight	Average weight chickens 20 weeks old	Per cent. weight
Small	1.66 oz.	100	1.87 lb.	100
Medium	1.90 oz.	114	2.29 lb.	122
Large	2.35 oz.	141	2.65 lb.	142

It will be seen that the small, medium and the large eggs bear the proportion of 100 for the small, 114 for the medium and 141 for the large. The eggs were incubated, the chickens hatched, leg-banded and weighed at frequent intervals during the summer. The data here covers the weight when they were twenty weeks old. You will see in the table the proportionate weight of the chickens hatched from eggs of the different sizes. The smaller eggs produced chickens that weighed when they were twenty weeks old 1.87 pounds, the medium eggs produced chickens weighing 2.29 pounds, and the large eggs produced chickens weighing 2.65 pounds, or in the proportion of 100 to 122 to 142. Not only did the size of the egg determine the weight of the chicken when hatched, but the same general relationship in the weights of the chickens at five months maintained as on the day when hatched, the proportions being almost identical. From these figures, it is apparent that if we are to produce eggs that bring a high price and continue to keep them of good size from year to year, we must expect to do so with a good-sized hen and if we expect to get a good-sized hen, we must use good-sized eggs to make the start.

HENS BETTER THAN PULLETS FOR BREEDERS

We advise people to breed from their hens rather than from their pullets. First, because hens lay bigger eggs than pullets; second, they do not lay as many eggs in the fall and winter as do the pullets, therefore, if they are properly handled, hens should be in better physical condition in the spring than pullets to give strong vigorous, good-sized chickens.

BREED FOR LONGEVITY

By breeding from hens in good physical condition, two or even three years old, we will have one or two years' opportunity to eliminate hens that inherit a tendency to short life. We are then breeding from the hens that have an inherited tendency to live long, and it is worth much for a chicken to be born from a line of long-lived ancestry. In this way we can wonderfully affect the inherited tendency to live in the future generations. Too many times in the past, the breeders, in their desire to get the largest net income from their stock, have bred continuously from pullets and thus have not had the benefit of the winnowing effect of time in eliminating individuals which died the following season. When you breed from a pullet, you do so before she has had an opportunity to prove herself. This is because she began to lay in the fall and early winter and has laid only five or six months when the hatching season arrives. The critical time in the life of a hen comes when she has laid for twelve months and then undertakes to molt and lay at pretty nearly the same time. Longevity is a point that must be emphasized. Therefore, do not kill the finest hens, those that have gone through a year or two of heavy laying and are still strong and vigorous.

At least one-quarter to one-third of the fowls on a poultry farm ought to be hens, one, two or three years old rather than pullets, and the same is true of the males. It is both a crime and poor business to sacrifice a male at the end of the year on the principle that a cockerel is younger and more active. Occasionally an exceptionally good male may be kept for several years, at least two or three. The very fact that he has the "staying qualities" that we desire to secure and perpetuate, is the best qualification he can possess. I have known of one male nine years old that was vigorous and strong and a good reliable breeder. He had two sons, it is reported by the owner, that lived to the same age as the father. This is a very unusual and surprising record. The pullets are better fall and winter layers than hens and should be kept for that purpose and not for breeding.

HOW TO SELECT THE HIGH-PRODUCING HENS

Manifestly, the trap nest is not feasible for farmers nor for poultrymen generally, although it must be used by the experiment stations and a few breeders. Therefore, we must find some physical indication that will help us to recognize and select our highest producers. We have discovered in our investigations at Cornell three or four principles that we can with perfect safety recommend to the farmers as guides in the selection of their most prolific stock, without resorting to trap nests, or at least for not more than two or three months in the fall and the winter, and even this is not necessary.

The highest producers molt late. The first physical character and the most valuable of all in selecting hens for breeders that are high producers is lateness in molting. The hen that is born to lay a large number of eggs and is well fed and handled will generally follow the line of least resistance and continue to lay and thus fail to perform the natural process of molting. This is because she has so much reserve power that she continues to lay, and as a result her feathers do not die and loosen. Although the comparison is not perfect, the same principle really maintains, if we compare a late-molting hen to a strong, vigorous apple tree that has been well sprayed. The leaves, like the feathers, continue to grow past their usual season and hang on the tree up to the winter time.

You will find by following through the daily record of Lady Cornell that she stopped laying the last week in November. We find that the hens that have laid only twenty-five, fifty or seventy-five eggs have, in almost every instance, molted during the summer, in July, August or September. They do not necessarily start laying again in the fall or winter simply because they molted early. The hens that molt late take the shorter vacations and begin to lay early again.

High producers have pale shanks at the end of the laying season. Another important factor in selecting high producers is the color of the shanks of the yellow-skinned breeds. If you were to examine the high-producing hens in the early fall, you would see that their shanks are "laid out," that is, pale in color. The hens that have had little to do during the summer except to loaf around and eat, usually have the finest kind of colored shanks and skin, whereas, the high-producing hens have laid out most of the color. After they have rested a month or two, the color will come back.

High producers are heavy eaters. Watch the hens and see them eat and observe how they act; it will help you to pick out the laying hens in the fall and winter. The hen that is the largest layer is generally the one that is eating the most food. She goes to roost late and gets up early.

We are not yet ready to go on record as to just how important the shape, size of body and internal organs are in distinguishing egg-laying qualities of hens, but there seem to be facts to indicate that the best layers do differ somewhat in type from the poorest layers, and that there are differences in the sizes of certain internal organs. It is doubtful, however, if the shape of the body alone will be found to be a safe or infallible character indicating production.

IMPORTANCE OF ENVIRONMENT IN EGG PRODUCTION

One of the problems on which breeding and feeding hinges is the question of how we shall handle and care for the hens. Here is a case like a great many others where the practice of the farmer, who did not pretend to know the theories of production, was ahead of the investigators. We all understand how the scientific men for years said that plants could not utilize the free nitrogen of the air, and yet farmers knew that clover made land richer. For centuries farmers and poultrymen, because of habit and convenience, let the hens run out of doors the year round. It was the natural and the easiest thing for them to do. But when they undertook to keep hens scientifically, men reasoned that the great difference between winter when hens did not lay and spring and summer when they laid best, was simply a difference in temperature. Therefore, they put their hens into close houses to try to keep in the heat and to keep out the cold and in so doing, they forgot a more important factor than temperature and that is the importance of God-given fresh air. They also failed to realize a well-known principle in physiology, that hens do not keep warm primarily by the clothes they wear — their feathers — but that they are warmed by the consumption of food and by the combustion of fresh air within their bodies; the feathers keeping the heat in and protecting them from the elements. Our experiments for two years past, with four flocks a year ago and six flocks this year, give us results absolutely confirmatory and conclusive of the fact that it pays better to let the hens run out of doors the year round, whether on ice or snow, in sleet or rain or sunshine or shade, theorizing, I suspect, that the good results are due to a number of factors, one of which is psychological. That is to say, the hen will lay better when she is *happy,* and she will be happy when she has her freedom. Part of the value of the hen having an opportunity to go out of doors every day, is the fact that she *can* and *knows that she can* go out if she wants to. Many a time a hen will go out, look around, and if it is cold and the wind blows the feathers up her back, she will run back in the pen and will be *happy now* where she was unhappy before she went out. She had her own way. When hens can run out daily, they have a chance to range on pasture late into the fall before snow comes and perhaps after the ground is frozen, and they can get to the ground again in the spring as soon as the snow begins to disappear in spots. This gives them their liberty and something to do. It is easier to take care of them, because the houses remain clean longer, and they are more healthy and eat better, because of the exercise in the sunshine and the fresh air, and we get better results. That is the evidence that counts. Experiments in letting the hens run out of doors as compared to keeping them shut up was tried with both pullets and hens. The experiments the first two years have two factors combined. One is that the hens that were running out in the winter were on range the year round, while those that were shut up in the winter have bare yards in the summer. It is a combination experiment to compare (1) close confinement versus freedom in winter, and also (2) grass range versus bare yards in summer. But the experiments are valuable as regards the close confinement in winter, because, when we put the pullets in the houses in the fall of the year and let one flock run out and kept the other shut up, we found that the pullets that ran out did better than the pullets that were shut up, and that the hens also that ran out did better than those kept in confinement. The gains are made principally in the winter season when the grass-range conditions could not affect the results. The pullets used in one experiment were reared together in the same cornfield and were similar in every respect. Our results were due, therefore, primarily to a question of liberty versus close confinement.

The *profits* show up more favorably for the hens and pullets that are on range than does their egg *production*. This is because the increase in the egg yield, due to their freedom, occurs when eggs are high in price. Let us consider the first year's experiments. The number of eggs laid by the pullets on the range was 164, while those in close confinement laid 147. In the case of the hens, those on range laid 105 and those in confinement laid 90. Taking the profit, including only feed, not the labor, interest on investment, etc., the pullets on the range made $3.25 profit and those in confinement $2.50; a difference of 75 cents per fowl more in the case of the pullets allowed to run out all winter. In the case of the hens, they paid a profit of $1.40 on the range and 83 cents in confinement; a difference of 57 cents.

As regards the fertility of eggs, we do not seem to gain anything in this particular experiment in the matter of fertility, either on range or close confinement. This leads me to say that fertility is a very unreliable criterion by which to judge the hatching value of eggs. An egg may be fertile; that is to say, it may show life and be called a fertile egg, that never could hatch, and frequently we get high fertility and very poor hatching power in the same eggs and vice versa. We hatched 97 per cent. of the fertile eggs set from the pullets that were on the range and 50 per cent. from those on the bare yards; 92 per cent. from the hens on range and 85 per cent. from the hens on bare yards. The same general proportion applies to the chickens that were reared.

TABLE IV.

	PULLETS		HENS		HENS AND PULLETS COMBINED	
	Grass range	Bare yards	Grass range	Bare yards	Grass range	Bare yards
Number of pen..........	**32**	**78**	**33**	**79**	**32–33**	**78–79**
Number of eggs set......	209	200	201	200	409	400
Per cent. fertile	73.60	98.50	62.10	87.00	68.20	92.70
Per cent. fertile hatched..	97.40	50.20	92.80	85.00	95.30	66.50
Per cent. hatched to number set	71.70	49.50	57.70	74.00	65.00	61.50
Average weight of eggs set.	.11	.12	.13	.13	.12	.12
Per cent. of chickens reared to number hatched......	92.60	80.80	84.40	81.70	89.00	81.30

The number of eggs laid the first year by the progeny of hens on range was 117 eggs as compared to 115 eggs from the progeny of hens confined. With all six flocks combined, we find the following results covering two years with three flocks of thirty to thirty-five hens and pullets on range, as compared to three flocks of thirty to thirty-five hens and pullets in confinement, that the number of eggs laid, on the average, was 134 for the range and 107 for those confined and not on range; a difference, therefore, of 24 eggs, just two dozen, which would average in the state of New York probably thirty cents a dozen for the season. In other words, there is a total average profit over feed of $2.21 as against $1.49, which is a difference of 72 cents in favor of winter and summer range. Nothing has been published on this subject, because we do not want to mislead any one by drawing false conclusions from a few experiments. It seems to me, however, that these experiments are pretty conclusive that it will pay to let the hens run out the year round.

DOES IT PAY TO CROSS-BREED?

There is another problem which we ought to mention in connection with increasing egg production. There is a general impression that it pays better to cross fowls than it does to keep pure breeds. I am perfectly certain that we cannot give more helpful advice to poultrymen than to urge them to keep pure-bred poultry and not to cross pure-bred fowls, but to keep one breed and to seek to make it better. I do not mean that pure-bred poultry should be kept for exhibition purposes necessarily, but it should, however, be of good quality.

In order to test two varieties, Leghorns and Plymouth Rocks, by crossing them, we experimented with four and eight flocks a year and are now closing out the experiment for the third generation. The results of the first year's work in crossing, comparing pure-bred White Leghorns with pure-bred Barred Rocks (meat type) and the cross of the Rock on the Leghorn and the Leghorn on the Rock, is shown in Table V.

The egg production of the pure-bred Leghorn averaged 182 eggs each, the cross of the Plymouth Rock on the Leghorn 151, the Plymouth Rock 129 and the cross of the Leghorn on the Plymouth Rock 153. It will be seen that by either of the crosses we have not increased the egg production over the Leghorn — in fact, the Leghorn is "far and away" in the lead as compared to either of the crosses. We have, however, increased in the crosses the egg production over that of the Plymouth Rock. On the other hand, you will find as regards the effect of crossing on size, that the cross of the Plymouth Rock (male) on the Leghorn and the Leghorn (male) on the Plymouth Rock increased the weight of each of the crosses over the Leghorn, but did not increase it over the Plymouth Rock. As affecting the fertility and hatching power of the eggs, we have gained nothing whatever by the process of crossing. The fertility of the eggs of the pure-bred Leghorn was 83 per cent. and that of the cross of Plymouth Rock on Leghorn 71 per cent., the Plymouth Rock was 68 per cent. and the fertility of the eggs of the cross of the white Leghorn male on the Plymouth Rock was 90 per cent. The activity of the Leghorn male apparently affected the fertility of the eggs in all instances.

The number of chickens hatched was 68 per cent. for the Leghorns, 55 per cent. for the cross of Plymouth Rock on Leghorn, 49 per cent. for the pure-bred Rocks and 50 per cent. for the cross of the Leghorn on the Rock. As to the number of chickens reared, all were so good that there is not much contrast. Crossing in this experiment did not appear to increase the vitality.

We can say from the experiments of the first year and the second year's crossing, that we have gained nothing whatever by crossing in any way you look upon it.

Profit. The Leghorn paid a profit over feed of $2.16, the cross of Plymouth Rock on Leghorn hens of $1.79, the Plymouth Rock $1.36, the cross of Leghorns on Barred Plymouth Rocks $1.56.

The profit over the cost of feed of the flocks of White Leghorn hens that laid us 182 eggs apiece was $3.94 each, whereas the cross of Rock on Leghorn was $2.97, the Rocks, $2.08 and the cross of Leghorn on Rock was $2.85.

TABLE V.

Number of pen	71	72	73	74
Kind of Fowls	S. C. W. L.	B. P. R. cross on W. L.	B. P. R.	W. L. cross on B. P. R.
Average weight at start	3.55	4.90	6.22	4.32
Average weight now	3.50	4.74	6.08	4.33
Average gain in weight	....	....	....	.01
Average loss in weight	.05	.25	.14	....
Eggs laid per hen	182.46	151.54	129.72	153.48
Cost food, per hen	$1.19	$1.33	$1.45	$1.32
Value eggs, per hen	$5.13	$4.30	$3.53	$4.17
Profit, food	$3.94	$2.97	$2.08	$2.85

DOES ARTIFICIAL INCUBATION LOWER VITALITY AND PRODUCTION?

For three years we have been conducting experiments in which we have been comparing the results of continuous incubator hatching and continuous hen hatching. Each year we pick out for breeders representative types of females and males from flocks of pullets and cockerels that have been hen hatched and incubator hatched. These are kept until they are two years old to see whether or not they break down any more quickly by virtue of the method by which they were hatched.

At the end of the first year of the experiment it was found that the pullets that were hatched by hens laid 162 eggs; pullets artificially hatched 142. The profits paid by hen-hatched pullets was $2.97, as against $2.52 for the artificially hatched.

The results of the second year were for the hen hatched 123, artificially hatched 121. Profit, hen hatched $1.60, incubator hatched $1.65.

The difference in the eggs was slightly in favor of the hen hatched and the profits slightly in favor of the incubator hatched because they happened to lay a few more when they were high priced.

The chickens that were reared from the hen-hatched and incubator-hatched stock is as follows: The progeny from hen hatched laid us 130.9; while those from the incubator hatched 136.2. The incubator-hatched stock carried through for the third generation have given us thus far five more eggs on an average per hen than those that were hen hatched.

Combining to get the whole effect of three years' hen hatching as compared with incubator hatching, we find that taking the three flocks of fowls, hens and pullets together, the net advantage is slightly in favor of the hen hatched — 139 eggs as against 133. The differences are not great. I suspect that with our methods of care it may be overcome by rigid selection, good housing and feeding, etc. Certainly the little difference here would not warrant a conclusion one way or the other. This experiment will be continued for many years, or at least until we are convinced that there is or that there is not a vitalizing influence due to artificial hatching.

Generally, the machines have hatched us more eggs than the hens. It is not proved, however, that the hen-hatched chickens are any better than those hatched in machines.

Whether or not we are going to be able to produce the kind of a hen we see before us — Lady Cornell — by artificial hatching remains to be seen. She and all of her ancestors for several generations, at least, have been artificially hatched. We have not hatched Leghorn eggs with hens, so far as I can recall, for the past six or eight years at Cornell, but have used artificial methods continuously. We have not yet seen the disastrous results from artificial hatching that I think people generally believe exist. If chickens are hatched by inexperienced people, in improper places and with poor machines, I should expect that there would be deterioration and loss of vitality in the stock by continuous artificial hatching. On the other hand, where the machines are of the best type and reasonably well handled in proper places, and particular care is emphasized in selecting eggs and stock, and if approved methods of feeding and housing are practiced, if then there is a tendency to deterioration due to artificial incubation, as there may be, it is not serious enough to be noticeable. In fact, the large poultry farms must hatch artificially. There are many men in this state, who have 1,000 hens or more, all of whom have been artificially hatched for many years.

The man who "wins out" in the poultry business commercially must plan each year to rear a few more chickens than he has hens in his flock. That is easy to remember. This will enable one to weed out freely, keep only the best and still carry over at least half as many pullets as hens. He can sell the surplus pullets easily and at a good profit.

CONCLUSION

In conclusion, I desire to emphasize that high egg production is both a question of breeding and care, and that there is great room for improvement in both these respects. The New York State hen is and will continue to be what we make her. She has a right to be the best in the world. We should all do our part to help her win this distinction, if indeed, she has not won it already.

ECONOMIC DAIRY FEEDING

By J. L. Hills

Dean of the College of Agriculture, University of Vermont

"All flesh is grass" and be that flesh human or brute; be its product meat, milk, wool, eggs or work, it traces back to vegetable food, to the nutrients contained therein and the energy supplied thereby. The dairy cow when eating grass, silage, grain, is simply consuming combinations of certain nutrients made by nature or modified by man, the same in their general character and function as are used by the human in its nutrition. Without going deeply into the chemistry of cattle feeding, suffice it to say the essential nutrients are protein, which is particularly concerned in the construction of muscle tissue and of the casein and albumen of the milk, on the one hand; and carbohydrates, under which polysyllabic term are included such things as sugars, starches, fibers and the like, which, with the fats and kindred bodies, furnish heat and energy and are the nutrients from which the fat of milk is most commonly made. In addition to these two principals, ash constituents are needed for the construction of the skeleton and for other uses; but for practical purposes, the ash may be disregarded since most farm roughages contain sufficient quantities to furnish all which the animal by any chance may need. Certain concentrates, particularly those made from the corn kernel, are so deficient in ash as sometimes to cause a shortage in this nutrient if fed exclusively or in excess.

Time was when great stress was laid upon the proportions of the proteids and carbohydrates, when it was believed that unless an animal was fed just so much of the one in proportion to just so much of the other, the results would be likely to be unsatisfactory. The term "balanced ration" was applied to the rations constructed of just so much protein and of just so much carbohydrates. Thus with the dairy cow, one part of digestible protein to 5.4 parts of digestible carbohydrates were held to be the proper proportions, and it was thought a cardinal sin to feed any proportion other than this. Less stress is laid to-day than formerly upon the mathematics of cattle feeding. It is appreciated that there are great differences between animals, and that really a "balanced ration" is not so much an expression of a mathematical proportion as it is an attempt to express the animal's need of a "square meal," a sufficiency of flesh-making and a sufficiency of energy-making nutrients.

Passing now to the consideration of the economics of summer and winter feeding as they obtain at the present time.

SUMMER FEEDING

Nothing, of course, is better for making milk than June pasture. However, June lasts but thirty days, and July pasture, and still more, August pasture, is relatively inferior. Furthermore, pastures in the northeastern states, through overstocking, early stocking and failure properly to maintain them, now rarely can carry enough cows to afford adequate returns. A soiling system, therefore, seems called for. The following statements quoted from Bulletin 158' of the Vermont Station tell the story of summer soiling:

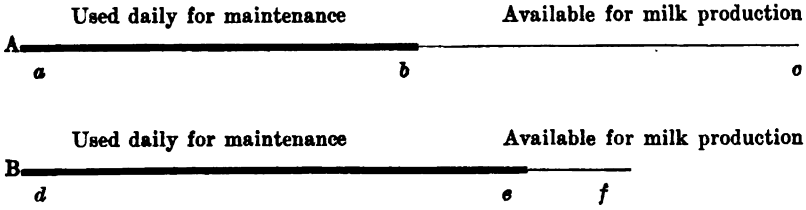
"Every dairy farmer recognizes and regrets the late summer shrinkage in milk. Some deem it to be unavoidable; others try to remedy matters by stabling the cows at midday and pasturing at night or else, by spraying the cows with some fly repellant. Neither device avails much of itself. Careful trials indicate that the flies, notwithstanding their abundance during the period of lessening milk flow, are not most largely to blame for this shrinkage. The cows give less milk because they are unable to get enough food and because they have to work so hard and walk so far in securing what they do get. Flies coincide with, but do not cause, the shrinkage.

It is well known that man or beast needs more food when at work than when at rest; that effort implies food. Some of this food is used for mere maintenance of the body, in keeping it alive. Some is used for work of divers kind, the hauling of loads, milk making, pork growing, etc. An average 1,000 pound cow under normal stable conditions needs from 8 to 9 pounds of digestible dry matter daily for maintenance. Fifteen pounds of ordinary hay containing, perhaps, 13½ pounds of total dry matter would supply this need. Grass, however, being more digestible and more easily masticated and digested than is hay, might be expected to supply 8 to 9 pounds of digestible dry matter from 12½ pounds of total dry matter. Pasture grass is of variable composition. Its maturity, its species, the prevalence of drought or rain, affects it. Taking the season through, however, mixed pasturage may be assumed to carry about 25 per cent. of total dry matter, and hence, 50 pounds of pasture grass would be needed for maintenance.

Feeding practice indicates that the average cow, yielding a medium grade and weight of milk, if she is to maintain her flow, needs from 22 to 29 pounds of dry matter daily, equivalent, on the foregoing assumptions, to 88 to 116 pounds of pasture grass. Let him who thinks that the cow has not much to do to gather 100 pounds of grass from the pasture, clip 100 pounds of short grass with a lawn mower; or, since the cow's mouth is narrow as compared with a lawn mower, let him clip a 100 pounds on a short lawn, or in the cow pasture itself, with a pair of sheep shears. Then the extent of her labor will be the better appreciated.

But the cow on a short, dry summer pasture does not hunt for feed until the full 100 pounds of grass are secured. She wearies of her search and, having collected, say, three-quarters of that amount, rests from her labors. But she uses just as much food in the mere maintenance of her bodily status whether full fed, half fed or unfed. Just so much, whatever the ration, must be thus used. If this maintenance allowance is 12½ pounds of total dry matter, the amount left for milk making will be 25 — 12½ = 12½ pounds, if she gets a full ration. If she eats but three-quarters of a ration it is ¾ of 25 = 18¾ — 12½ = 6½ pounds of total dry matter available for milk making. The cow has looked after herself in each case, but wearies of her search for the more so hardly won, which she herself does not need.

It was stated above that from 8 to 9 pounds of digestible dry matter, or from 12½ to 15 pounds of total dry matter were needed, to maintain an ordinary cow under normal, comfortable winter conditions. More than this, however, is used when she is compelled to search for food over a wide area of short grass pasture. This point may be indicated by the following simple diagram.


Used daily for maintenance
Available for milk production
A
a
b
c
Used daily for maintenance
Available for milk production
B
d
e
f

Let A represent the conditions of abundant pasture, and B those of short pasture. Then the distance from *a* to *c* represents the total amount of food consumed in a day when pasture is abundant; the distance from *a* to *b*, the amount used for the maintenance of the animal body; and the distance from *b* to *c*, the amount of grass and other food which can be daily transmuted by the cow and turned into milk. She consumes in case A twice as much food as she requires for maintenance, thus affording a goodly surplus for use in milk making. Under the conditions of scanty pasture, however, but three-quarters as much is eaten, as is shown by the length of the line *d* to *f*. The amount needed for daily up-keep, as shown by the distance from *d* to *e*, is one-fourth greater than in the former instance, because of the extra labor involved in searching for food, thus leaving a very small amount, represented by the distance from *e* to *f*, available for milk construction. The smaller total quantity eaten and the greater amount required for maintenance, leave but a small surplus of the food which is eaten when the cows are on short pasturage which is available for milk making; or, to rephrase the comparison, only a fourth part as much is available for milk making on short as on abundant pasturage, and only one-fifth of the total food eaten when drought prevails is used in milk making, while four-fifths of it is consumed in mere bodily maintenance. The diminution of the total consumption by one-fourth and the increase of the cost of maintenance by one-fourth are pure assumptions; nevertheless they are thoroughly fair ones. Whenever pastured young stock is unable to maintain its weight during droughty August, it is clearly due to its inability to obtain food enough for maintenance purposes.

Remembering, then, that the cow creates nothing, but merely changes into milk some of the surplus of her food; that the amount which can be thus transformed is represented by the difference between the total amount consumed and that required for her daily up-keep; and that the more she can be induced to consume and the less she is compelled to travel for her food, both within reason, the more milk will she make and the more economically will she make it; there is little need of arguing the economic necessity of some sort of supplementary feeding.

WHAT TO FEED

Hay, though it be of a good quality, is worth but little as a supplement to pasture, for the reason that when two-thirds to three-fourths of the ration consists of juicy and more highly flavored food, the cow does not take readily to dry stuff. Hay may be used, however, especially with young and dry stock, allowing it to eat at will, thus assuring that positive hunger does not exist.

Grain feeding is often resorted to as an easy and efficient means of maintaining the milk flow; but it is an expensive procedure, especially if much is purchased. It may be fed profitably, however, on short pasture to cows which are milking heavily, or to such as are thin and need building up before their next freshening. The amount fed naturally varies with the extent and worth of the available pasture and with the intensity of the need.

Partial soiling. The soiling (soilage) practice is the reverse of the pasturage system. The food is brought to the cow rather than the cow sent to the food. Green crops, such as peas and oats, millet, corn, or a combination of these with other crops, are grown, cut and fed to the cows while housed in the barn. The complete system contemplates no pasturage whatsoever and is not well adapted to Vermont conditions. Partial soiling, however, that is to say, the feeding of fresh roughage, such as the crops above mentioned, in conjunction with and supplementary to pasturage, is a procedure which may well be practiced on many Vermont farms. The following table displays the recommendations made by the Massachusetts Station as to soiling practice, slightly modified the more nearly to meet what the writer deems to be Vermont conditions. This table may serve as a guide as to what, when and how much to plant and sow to meet the certain needs of short pasturage.

SUMMER SOILING CROPS

A plan showing a sequence of the green crops which may be planted to help out the pasture, or as a partial substitute for hay and grain. (Basis, ten cows.)

Crop	Seed per acre	Approximate time of seeding	Area	Approximate time of cutting
Rye	2 bushels	Sept. 1	⅓ acre...	May 20-May 30
Wheat	2 bushels	Sept. 1	⅓ acre...	May 25-June 8
Clover	15-20 pounds ...	Aug. 1	½ acre...	June 9-June 25
Oats and peas..	1⅓ bushels each	April 25	⅓ acre...	June 25-July 6
Oats and peas..	1½ bushels each	May 5	⅓ acre...	July 6-July 17
Oats and peas..	1½ bushels each	May 20	⅓ acre...	July 17-July 28
Barnyard millet.	14 quarts	May 20	¼ acre...	July 28-Aug. 8
Barnyard millet.	14 quarts	June 5	¼ acre...	Aug. 8-Aug. 18
Barnyard millet.	14 quarts	June 20	¼ acre...	Aug. 18-Aug. 28
Sweet corn	15 quarts	May 15	½ acre...	Aug. 18-Sept. 10
Corn (field) ...	15 quarts	May 25	....	Sept. 10
Barley and peas.	1½ bushels each	July 25-Aug. 1..	⅔ acre...	Oct. 5-Oct. 20

It should be noted that the dates of seeding and cutting are suggested for Massachusetts usage; they may be modified as dictated by judgment and experience.

It may not be necessary to plant all these crops, but some may prove helpful.

In view of the one-third to two-thirds shrinkage which is apt to occur during a hot, dry mid-summer, and of the other attendant ill effects of such partial drying off; and in view of the ready means at hand in the use of soiling crops of lessening this evil, one can hardly overemphasize the value of supplementary forage crops or the use of the summer silo.

Silage is easily the most economical winter food for growing, fattening or milch animals. The better dairy farmers generally use it for winter feeding. The summer silo, however, merits more attention than is now paid to it. On many farms, where the pastures are generally over-stocked and the grass short for most of the season, these should be depended upon to supply the working herd for only a few weeks, after which time summer silage should be regularly fed. Under such conditions the station cows readily eat from 10 to 20 pounds daily, depending upon the severity of the pasture shortage, even though at the same time receiving from one-third to one-half the usual winter grain ration. It is customary to feed the grain at night in order to induce them to come to the stable more promptly, and to feed the silage in the morning while the animals are hungry. The herd shrinks but moderately in milk flow during "dog days" and enters upon its winter's work fully prepared to continue strongly throughout the season instead of dragging on as mere strippers.

Normally the year through cows may be expected to shrink the quantity of their milk flow during a given month not far from 9 per cent. of the yield of the preceding month. This is, of course, an average statement and the figure is far from being a constant. Under good winter stabling conditions it is not as large as this; but when midsummer's heat parches the pasture, it is doubled or trebled, unless soiling crops are fed.

Although this situation is quite generally understood and its consequences accepted by many dairymen in a fatalistic sort of way, it has seemed worth while to adduce some testimony afforded by the station herd for the benefit of those who believe in helping themselves. The record of a group of 20 cows, calving normally from January to May during each year 1907–1910, inclusive, is compared in the subjoined table with similar records afforded by a group of six normally calving cows, made three in 1908, one in 1909 and two in 1910. Eighty records (20 cows 4 seasons) contribute to the one and six to the other side of the table. The records are for five successive three-week periods beginning June 10 and closing September 20. The 20 cows were turned daily into an overstocked pasture and ate, in addition, about half the usual winter ration of grain and silage, but were fed no hay. The smaller group was stabled throughout the year, but its members were turned into a yard for exercise during the same time daily that the regular herd was pastured. They were fed hay silage and grain in the winter. The difference between the two groups is primarily the difference involved in the travel for food. The statement is phrased in terms of daily yield per cow.

	PARTIAL SOILING		TOTAL SOILING	
	Milk yield	Shrinkage compared with previous month	Milk yield	Shrinkage compared with previous month
	Pounds	*Per cent.*	*Pounds*	*Per cent.*
Last three weeks in June	20.5	...	25.3	...
First three weeks in July	18.5	9.5	25.3	0
Three weeks in July and August	16.2	12.5	22.6	9.8
Last three weeks in August	14.8	8.4	22.3	2.5
First three weeks in September	12.1	9.9	20.5	7.8

Average shrinkage per month — partial soiling 13.3 per cent., total soiling, 6.7 per cent.

The comparison is an interesting one. That the latter group made the more milk is unimportant, for that is merely the difference between cows; but that it shrunk only half as much in flow during these 15 weeks is significant. There was no material difference in the matter of time elapsed since calving. It would seem, therefore, that the search for food by the pastured cows, even though they were partially soiled and apparently had all they wanted to eat, cost money in terms of a lessened milk flow; perhaps, however, not more than would have been the extra cost of total as compared with partial soiling. The latter group had all its food brought to it; the former had but part of it laid before it and had to hunt for the rest.

And what about those cows which have to hustle for all their food? And what about the creamery or milk car check, one month as compared with its predecessor? Is it 6.7 per cent. less; or 13.3 per cent. less; or 30 per cent. less?"

WINTER FEEDING

The common winter roughages are hay, the corn plant either ensiled or stooked and roots. The concentrates are multitudinous in number. Concerning these several materials:

ROUGHAGES

Hay. There are hays and hays. A ripe timothy hay is admirably calculated to discourage a cow from continuing to give milk, for the reason that it is relatively indigestible, low in proteids, high in crude fiber. An early cut hay of any kind serves a better purpose. In proportion as this hay contains legumes, more particularly clover, in that proportion the likelihood of its being thoroughly serviceable is enhanced. The legumes carry more protein than do other kinds of plant life and lessen the necessity of grain purchase. An early cut hay containing much clover, when properly cured, can hardly be excelled as a dairy feed.

Corn. The corn plant is easily king among the dairyman's crops. More digestible dry matter can more easily be produced in an acre of corn in the northeastern states than in any other crop; and a pound of this dry matter can be placed in a cow's manger at a less cost than can a pound of any other dry matter, especially if a silo is used. An air-tight, modern silo is very much the most satisfactory package in which to preserve corn. Furthermore, so far as the cow is concerned, there is no necessity of husking the ears. Some of the better ones may be snapped off for horses, hens or for seed; but the cow makes more milk and butter when ears and all are cut into the silo. Without irreverence one may very properly say in this connection, "Whom God has joined together, let not man put asunder."

Apple pomace. Although not strictly a crop, this roughage is well worth while. It can be fed for several weeks in the fall, indeed, for quite a ways into the winter, with satisfaction. It certainly is two-thirds, perhaps three-fourths, as good, weight for weight, as is average corn silage. Cows are fond of it, they do well on it, and it may be fed in fairly liberal quantities. We have fed 35 pounds daily per head without the slightest trouble. It should be fed gradually, however. It is our custom to bring it from the cider mill and dump it on the barn floor. We have put it in silos and had it keep in good shape into March. We pay $1 a load for as much as two horses can draw and find it a cheap and desirable feed. Our experience has been confirmed by that of other investigators.

Alfalfa. If corn is king and clover queen, alfalfa is the ace in the pack. The writer rarely plays cards, and then rarely has any luck and rarely sees an ace in his hand. So it is with alfalfa; the ace is uncommon. Failures are far more common at the outset than are successes. There are certain essentials in the growth of the crop which must needs be understood if one would avoid failure. It were well for readers of this article to secure the station bulletin on "Troubles of Alfalfa in New York State," addressing the Experiment Station at Geneva, N. Y.

Roots. These materials are highly desirable and relatively costly forms of digestible dry matter. One who for any reason cannot have a silo or will not use silage, may well feed roots; but such a case is like that of a man who eats cake in lieu of bread. Cake is very pleasant to eat, but it costs more than bread.

The story as to concentrates may perhaps be best told by excerpts from bulletins 144 and 164 of the Vermont Station, the product of the writer's pen.

GRAIN RATIONS

"Every experiment station is often asked 'What is the best grain ration?' for cattle or for horses. The writer does not recollect a single request for a good ration. The best one is always sought, but there is no best, nor will there ever be such. There are plenty of good ones, some better than others, some to be preferred over others when the market is thus and so, but not to be preferred when it is otherwise. Thus for example, bran at $20 a ton should be freely used, while at $30 it is a luxury. Yet on the other hand it is difficult to get along without it and even at the higher price must often needs be used although perhaps in smaller quantities than when it is cheaper.

To be thoroughly acceptable a ration should be:

1. Bulky, measuring more in quarts than it weighs in pounds, because heavy rations are relatively indigestible.

2. Palatable and free from mold or other deterioration due to imperfect storage.

3. Proteinous to the extent of 16 or more pounds *digestible* protein per hundred. It should be noted that this dictum calls for *digestible* not *total* protein.

4. Sufficiently digestible to carry 60 or better, 65 pounds of digestible dry matter per hundred.

5. Capable of furnishing at present high prices a 7-pound ration at a cost not to exceed 11 cents.

The following rations are suggested which ought to prove fairly satisfactory for the purposes mentioned. The figures shown do not indicate the amounts which should be fed, but prescribe the proportions by weight, not by measure, of the sundry feeds to be employed. The amounts to be fed will naturally vary according to local circumstances, the character and extent of roughages available, the type of animal used, if cows whether new in milk or strippers, etc. In short, judgment must be used in the employment of these rations as to the amount which it is desirable to feed. The order of statement has no meaning. The writer expresses no preference for any one of these rations, each of which he deems worthy of use. Economic considerations will naturally govern the feeder in his choice. Furthermore and finally it should be said that a multitude of other combinations quite as serviceable may be made, as well as myriads quite unadapted to this purpose.

The tables indicate 18 mixtures for dairy cows; numbers 7 to 13 are with slight modifications taken from Bulletin 112 of the Massachusetts Station.

	FOR DAIRY FEEDING	Pounds
I.	Dried distillers' or brewers' grains	4
	Wheat bran	3
	Cottonseed meal	2
II.	Wheat bran	5
	Cottonseed meal	1½
	Linseed meal	1½
III.	Dried distillers' or brewers' grains	3
	Wheat bran	2
	Cottonseed meal	1½
	Linseed meal	1½
IV.	Gluten feed	1
	Dried distillers' or brewers' grains	1
	Cottonseed meal	1
V.*	Gluten feed	2
	Corn-meal or hominy meal	2
	Dried distillers' or brewers' grains	4
	Cottonseed meal	1
VI.	Wheat mixed feed	2
	Gluten feed	1½
VII.	Wheat bran	3
	Gluten feed	3
	Cottonseed meal	1
VIII.*	Wheat bran	5
	Cottonseed or linseed meal	4
	Corn-meal or hominy meal	5

		Pounds
IX.	Wheat bran	3
	Gluten feed	4
X.	Distillers' or brewers' dried grains	3
	Wheat bran	1
	Cottonseed meal	1
XI.	Distillers' or brewers' dried grains	4
	Wheat middlings	3
XII.*	Distillers' or brewers' dried grains	3
	Corn-meal or hominy meal	2
	Gluten feed	2
XIII.*	Distillers' or brewers' dried grains	4
	Corn-meal or hominy meal	2
	Cottonseed meal	1
XIV.*	Wheat bran	4
	Corn-meal or hominy meal	4
	Linseed meal	2
XV.	Distillers' or brewers' dried grains	4
	Wheat bran	3
	Corn and cob meal	2
	Cottonseed meal	1½
XVI.*	Distillers' or brewers' dried grains	4
	Gluten feed	4
	Corn or hominy meal	2
	Linseed meal	1
XVII.*	Corn-meal or hominy meal	3
	Wheat bran	4
	Cottonseed meal	2
XVIII.*	Dried distillers' or brewers' grains	3
	Wheat bran	4
	Corn-meal or hominy meal	1
	Linseed meal	1

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* These should be used only when well-eared corn fodder or silage is lacking or scanty.

The question may be asked why certain articles are not included in the formulas. The reasons for their exclusion from these suggested rations are as follows:

Molasses feeds as a class. Because as a class these goods furnish relatively costly digestible dry matter and relatively costly digestible protein, and because as a class they are still under suspicion in the matter of weed seeds with which, up to very recent times, they have been heavily loaded.

Alfalfa meal. This material furnishes digestible dry matter and protein at a relatively high price. It contains a little more protein probably than does a high grade clover hay. To pay $30 a ton for clover hay would be thought insanity.

Corn and oat feeds. For the reason that this class of material as is well known carries extraneous oat hulls and tends to be low in protein. It furnishes very costly digestible dry matter and digestible protein.

Provender. To feed this material to cows at present prices of corn and oats when it carries but 10 per cent. protein is obviously unwise.

Rye middlings are not indicated for feeding cattle for the reason that there is likelihood that they may cause ergotism and consequent abortion if they are freely fed.

Flax feed has been a highly undesirable material even at a bottom price. Up to the last inspection this class of goods has consisted mainly of unground seeds, a large share of which were of weed types and were viable. The jobber of the only brand now found upon Vermont markets claims at present to be putting out a material, the seed content of which is entirely ground.

Proprietary rations. These are materials placed upon the market as complete mixtures and obviously do not adapt themselves to the making of a mixture.

It may be noticed that the wheat mixed feeds are but rarely suggested. The writer feels that this material is more open to sophistication than are either bran or middlings and that this adulteration is more readily overlooked. It consists of bran and middlings together with other less important wheat offals and sometimes includes screenings. He sees nothing at present prices to commend mixed feeds as compared with the separates.

Corn-meal and hominy feed are suggested only in cases where the home-grown corn supply, either as corn fodder or as corn silage, is scanty. For the buyer to pay $30 or more for this material if he has a sufficient amount of corn at home is to take coals to Newcastle."

DISCUSSION

Question.— What is the best variety of seed-corn for silage?

Answer.— It is that variety which will grow you the largest amount of dry matter per acre and most nearly reach maturity.

Ordinarily, use nothing but what will in a normal season glaze before frost.

Question.— How much is corn for silage injured by freezing?

Answer.— We found that freezing of silage corn only depressed feeding value from 1 to 2 per cent. over silage corn not frozen, when the corn was put in the silo immediately after the frost.

Question.— Can corn be put in a silo without cutting?

Answer.— It can be done if it is put in very carefully.

Question.— Can you change the quality of milk in the feeding of a cow?

Answer.— Temporarily and to a very slight extent, yes; permanently, no. Feeding will change the quantity of milk, but the quality of the milk, the fat percentage, is bred in the animal and cannot materially or permanently be changed by feeding.

THE CORN PLANT IS KING AMONG THE DAIRYMAN'S CROPS.

COW TESTING ASSOCIATIONS

By J. L. Hills

Dean of the College of Agriculture, University of Vermont

For years the speaker has been interested in the general proposition of cow testing associations and has been in the forefront of the movement in Vermont, where now a dozen associations are at work and more in embryo. He has discussed the matter before the dairymen's and other associations in five of the six New England States, as well as before the National Dairy Show in 1909. He may perhaps claim, without egotism, to have some special knowledge touching this subject.

Let us review:

I. The purpose of these organizations.
II. Their history.
III. The essential features which make for success.
IV. What the individual may gain by membership.

I. THE PURPOSE

The essential and particular purpose of a cow testing association is the determination of and the betterment of the dairy abilities of its individual cow members. There are several subsidiary reasons why it is worth while for dairy farmers thus to associate themselves together, as will be developed later; but this is the primary and principal one. Its main object is to lead the cow owner to look upon the individual animal rather than upon the whole herd as the unit; to encourage him not to think of his herd as a whole as his source of income, but of each individual animal in the herd as a separate and distinct living mechanism, whose output is to be measured and compared with its usage of material. These organizations may very properly be called Amalgamated Associations for Bovine Betterment. Like the divers secret orders they have working tools, passwords, maxims, mottoes. The working tools are the scales, the Babcock test and the axe; the alliterative passwords, more milk, more money; the cardinal maxims are the rhyming words, breed, weed and feed; and the two mottoes applicable the one to the inferior and the other to the superior cow are Eureka — "I have found it" — for the inferior cow, and Excelsior — "to the heights" — for the superior cow.

On the face of it, it seems absurd to ask dairymen to combine in order to do that which each man ought to do for himself. It seems ridiculous that men should milk unprofitable cows, knowing them, in a general way, to be such, and knowing moreover that it is entirely possible for them to detect the existence of such animals in their herds. Shakespeare states the case well when he says: "If to do were as easy as to know what were good to do, chapels had been churches and poor men's cottages princes' palaces." Farmers know that they should test their cows and spray their crops, but as a rule they do not test or spray. They plead lack of time. The inertia is difficult to overcome. When, however, the test is made by a regular, trained operator, better and more accurate work is done and often at a less expense in co-operation than when done by each individual for himself. The cow testing association, in short, is a business proposition; the merging of the needs of neighboring dairymen and the hiring of a man to do this work for them.

II. HISTORY

The first cow testing association was formed some fifteen years ago in Denmark. There are now many hundreds in that country with thousands of human members and tens or hundreds of thousands of bovine members. They are scattered all over the Scandinavian dairy region, in Germany, in France and elsewhere. For some time large numbers have been active in the provinces of Quebec and of Ontario. There are now from 50 to 100 at work in the United States.

The scheme is not adapted to universal usage. It can only be thoroughly successful in regions where the cow population is fairly dense; where dairying is a primary occupation rather than an incidental one; where the mental attitude of the members is cordial, and they are broad minded enough to see the value of cooperative methods; and apparently only under circumstances where, at the outset at any rate, external impetus is afforded in starting the enterprise, and constant external supervision and push is exerted to keep it going. In other words, the average dairy farmer, or even his more intelligent neighbor, rarely of his own initiative combines with others or, having thus combined, maintains enough enthusiasm to keep the organization going. It is only when a close oversight is kept of the work that the organizations really seem to succeed. In other words, a very considerable amount of paternalism must be exhibited in their conduct. Thus in Wisconsin, an annual state appropriation of $3,000 is employed solely for the purpose of starting and overseeing these organizations. Two supervisors are constantly at work, dealing particularly with her associations, keeping them in motion and, so far as may be, keeping them out of trouble. In Maine a deputy of the commissioner of agriculture has made the supervision of these organizations one of his duties the past year. In Canada the dominion government, through its department of agriculture, looks very carefully after the many organizations, provides for the testing, calculation, etc., and watches the whole enterprise in a fatherly way. In Vermont the commissioner of agriculture keeps tab on the associations. We have in Vermont in one way the best chance that exists anywhere in the United States for these organizations; for the the density of our bovine population in many sections enables the gathering of 500 cows into an association of this kind within a relatively small radius a matter of little difficulty. On the other hand, we have, in some respects, one of the hardest situations in the country, because of the extreme conservatism of our New England farmers and their individualistic spirit. We now have over 6,000 cows under test in Vermont associations.

Cow testing associations are of two sorts; one wherein the work is done by an employee hired by the association, who passes from farm to farm and on whose shoulders the entire responsibility for the conduct of the work rests; the other wherein each individual farmer periodically weighs and samples the milk of each cow, the testing and figuring being done for him at some central place. The former method is doubtless the more accurate, also the more costly. The latter method involves but little expense. but the results, it must frankly be confessed, have no more value than attaches to the public estimation of the correctness and integrity of the individual farmer. Moreover, few farmers, as a matter of fact, will systematically and carefully attend to these matters of weighing and sampling. The method which I believe is in vogue in all the associations now extant in the United States involves the hiring of an employee to pass from farm to farm in the fashion outlined below.

III. ESSENTIALS TO SUCCESS

A system of record keeping of the kind now under contemplation, to afford results that are worth while, must work, must cost but little, must tell the truth, must instruct its members and must pay. It must, in other words, be practicable, economical, accurate, educational, profitable. Let us develop these several important points:

(*a*) *Practicability.* "The proof of the pudding is in the eating thereof." The proof of the practicability of a cow testing association is the work which has been accomplished. The fact that hundreds and perhaps thousands of these organizations have proved their worth in the old country; that, largely as a result of membership in these organizations, the milk and butter product of the Danish cows has vastly increased of late years; these are proof positive of the practicability of the scheme. Moreover, the fact that the members of the earlier organizations in this country started in Michigan have continued their work for several years, have increased their milk and butter products, are doing better dairying, are making more money; all this, also, is evidence to the same end. What man has done, man can do. The potentialities of this line of work are great in any location where there are enough cows to make it possible to get from four to five hundred in the membership. Of course, where the second method above mentioned is employed, that is to say where each farmer weighs and samples the milk of his own cows, the number of animals grouped in the association is a matter of minor importance. It may be few or many; but, where a man is hired to pass from farm to farm, a 26-man and 500-cow association is ideal.

The conduct of the hired-man system is essentially as follows:

Twenty-five or more farmers agree to pay about a dollar a cow per year into a common treasury. This amount, usually paid in quarterly instalments, is employed in the purchase of a test outfit (acid, glassware, sample bottles, etc.), in the securance of a well-informed young man of pleasant disposition, who passes from farm to farm and once a month arrives in the afternoon at the house of each member. That evening he weighs and samples the milk of each cow and makes a close estimation by weight or otherwise of the amounts of roughage and concentrates fed to each animal. The next morning he repeats the operation, and then tests his samples and makes the calculations. At the end of the year he furnishes to each man a complete statement of the weight of milk, of butter fat, and of butter produced by each animal, of roughage and concentrates eaten, and strikes a balance between profit and loss, indicating thus whether the animal has or has not paid its way during the year. The monthly records are left at each member's farm from month to month so that he may study them. It often happens that certain cows early shown to be unprofitable naturally are disposed of before the year is closed.

(*b*) *Cost.* The conduct of an association of this character is naturally governed in some degree by the number of animals that can be handled. It will rarely happen that a single man can test to advantage more than 500 cows. There are only 31 days in a month, four or five of which are Sundays, and the fourth commandment is still on the statute books of Moses; hence it follows that there are certain limitations. Moreover, a young man of the type mentioned should be paid more than ordinary farm wages, for he does a higher grade of work than does the average farm laborer. His work is not laborious in the physical sense, but is exacting and takes a good deal of time. The mathematical calculations in particular take a long time. They must be carefully and accurately done or they mean nothing. Hence it is, that a young man should receive $35 a month and board or more. This will mean with the outfit and other expenses an assessment of at least a dollar to a dollar and a half, according to the number of cow members. This is not a heavy charge when one considers that the worth or worthlessness of the machines with which the dairyman is making his main sales produce and from which he is making either profit or loss is thus disclosed.

(*c*) *Accuracy.* It may very properly be queried whether these infrequent weights and samples afford results which are accurate. This question can be answered in the affirmative. It can be asserted, without fear of successful cavil, that if weights, samples, etc., are properly made the results are accurate within a reasonable margin, sufficiently for practical purposes. Everything depends, however, upon the human element, upon the personal equation. If the operative is not painstaking, conscientious and well informed, the results are of but little value. One of the Vermont associations was nearly wrecked last winter by the careless work of the operative, who knew what to do, but was not inclined to do his work as he should. Moreover, the results in individual cases may be queered by the farmer. He is supposed on the day that the operative is present to handle his animals and to feed them in all respects as he usually does. He is supposed, within reasonable limits, to feed in a fairly regular fashion right along through the month, so as to make the one day's work representative of the entire month's work. If, however, he thinks it is a smart thing to feed heavily a few days before the operative comes, so as to make a big record, he will be simply cheating himself or, perhaps, the man to whom he expects to sell his cows. Equidistant, or nearly equidistant, days of record keeping and an even feeding practice are necessary to the obtaining of reasonably exact data.

(*d*) *Educative value.* The cow test association work has great educative value. It teaches one the difference between cows. It throws a flood of light upon dairying operations. It is quite common for these organizations to hold monthly meetings, particularly from October to April, at which addresses are given and records compared. A most illuminating series of remarks has been recorded by Dr. Leon S. Merrill, former deputy commissioner of agriculture of the state of Maine, under whose watchful care the Maine organizations completed their first year. He states in the September, 1909, bulletin of the Maine Department, that "the following sentences are accurate transcriptions of the remarks made by members of the different associations at the monthly meetings held during the year and tersely express the appreciation of these men of the cow testing association:"

"I have learned the value of definite knowledge concerning one's business."

"I have learned the value of method in conducting a dairy business."

"I have learned that cows vary in production of milk and milk fat."

"I have learned that cows vary in food requirements."

"I have learned that the cost to produce a pound of milk fat varies widely with different cows."

"I have learned that the consuming capacity of a cow often exceeds her producing capacity."

"I have learned much concerning methods of feeding."

"I have learned something of the part the food nutrients play in the economy of animal life and milk production."

"I have learned the analysis of feed stuffs."

"I have learned that protein is sometimes fed in excess."

"I have learned to have a genuine pride in good dairy cows."

"I have learned the importance of breeding."

"I have learned that breeding operations should be carried on with intelligence."

"I have learned that fads have no rightful place in the breeding of dairy animals."

If these statements are not indicative of the educative value of the cow testing association work, the speaker cannot conceive what more external evidence would be needed.

(c) *Do they pay?* Emphatically yes, if the individual member so desires. But it depends entirely upon him whether they are or are not worth while. If the dairyman takes no pains to study the records or to attend monthly meetings or, having got his data, to act thereon in discarding unprofitable animals, they will not pay.

IV. WHAT IS GAINED BY JOINING A COW TESTING ASSOCIATION

(*a*) An accurate record of the work done by each cow expressed in terms of weight of milk and of butter and in terms of profit and loss; the substitution of exact knowledge for guess work or for no desire for knowledge.

(*b*) An opportunity to compare the animals within the herd and between herds. One gains more by comparison than by the simple survey of individual data.

(*c*) Advice as to best methods of feeding and breeding and herd management in general.

(*d*) The educational and social features of the monthly meetings.

(*e*) Cooperative purchase of fertilizers, feeds, seeds, even of household supplies. One of the Vermont associations has within the past year saved enough in cooperative purchase of some of these materials to pay the entire expenses of association membership.

(*f*) Breeders' associations, community breeding, etc., are further benefits obtained by membership in these associations.

V. EXAMPLES OF RESULTS

In the two Maine associations, which began with 700 cows, 360 went through the twelve months. The average fat production of the best herd was 363 pounds, a very large figure; the poorest but 146 pounds. The average profit per head in the best herd was in excess of $50. The poorest herd achieved a loss of five dollars per head. Four herds made more than two dollars for a dollar expended for food; 17 more than $1.75; while four herds did not yield dollar for dollar, the poorest giving but seventy-six cents for a dollar expended.

Twenty-two of the 31 herds in one association, or two out of three, contained unprofitable animals. One in five of the cows that went through the year was unprofitable. In another association 18 out of 32 herds contained losers, and one cow in ten failed to yield a profit.

One cow made fat for twelve cents a pound; another for sixty-eight cents a pound. On the average, fat cost twenty-one and one-half cents a pound. On the average $1.48 was returned for a dollar expended. The extremes for individual cows were $2.63 returns for a dollar expended, and forty-five cents returns for a dollar expended. It cost on the average nearly $50 to feed a cow, the extremes ranging in round figures from $33 to $71.50.

Of the 100 cows which were kept at a loss, 32 were sold and 68 kept. At the same time 109 cows were sold which were found to more than pay their way, and 29 of these were from herds in which unprofitable animals were retained. The 68 losers were kept in 35 herds from which profitable cows were sold. No statement is made in the returns as to the prices obtained for either the profitable or unprofitable animals that were sold, but the statement is made — and it seems to the speaker a reasonable one — that it took a good deal of courage for a man to start in a second year with an animal which he knew had been unprofitable during the first year, unless he was able to advance some good reason why she had not done better.

The following quotations are taken from a recent bulletin issued by the Vermont commissioner of agriculture, the product of the writer. They epitomize the essential results attained in a year's work in three associations with 11 of the 75 herds.

Association A

A uniform and high-grade herd of registered and grade Jerseys, which has long been in charge of its owner, who for years has systematically tested and weeded out his cows, who has fed well, bred well, who sells his products to good advantage. His average butter fat product was 242 pounds, his average profit was $40.80. Only one cow in thirty-seven failed to make $20 or more profit, over and above the cost of the food.

A small dairy, drying early and staying dry for several months; fed on an average but $15 worth of roughage and $5.50 worth of grain; averaging but 107 pounds of butter fat, equivalent to about 125 pounds of butter. The average profit was but little over $10 per cow; and nearly 40 per cent. of this was afforded by one cow. They all, however, paid for their keep. This is apparently a case where the cows have hardly had a chance to show what they could do. To condemn the cows would possibly do good animals an injustice.

The test operator says concerning this herd:

"The farm is very dry and sandy and every year until last year the cows were fed from the barn all the year. Last year when pastures were the poorest in a long time, the cows were not fed thus. In winter they had but very little to eat. They would eat the handful of hay and call for more. They had very slender barrels and long legs and I think have always been under-fed. This dairy is not in the association this year."

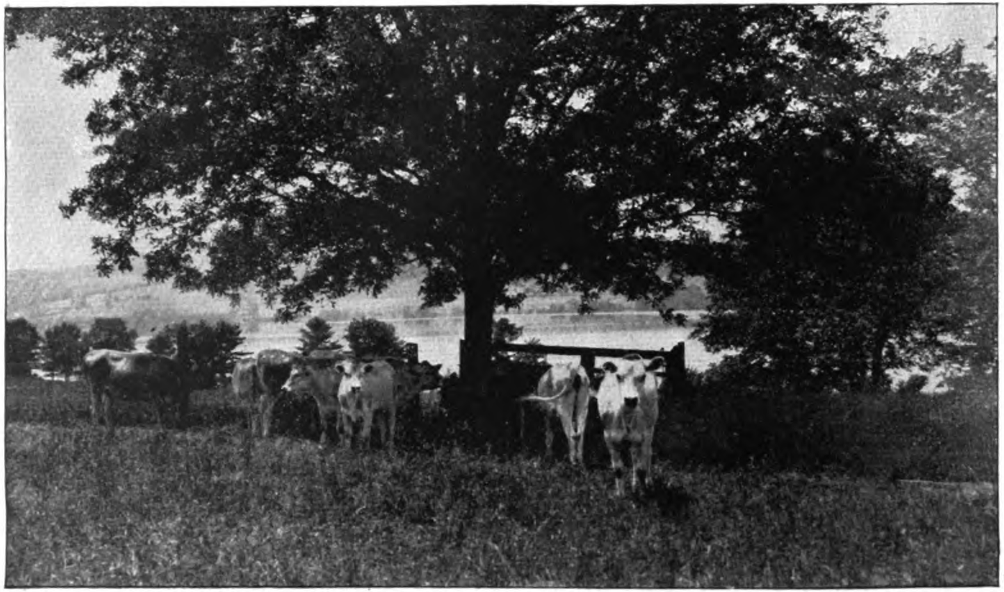

FIG. 62.— REGISTERED JERSEY HEIFERS.

A rather small dairy averaging fair amounts of butter fat, 160 pounds; fed very heavily with roughage, averaging to cost $40 per cow, and but lightly with grain, feed averaging to cost about $5 per cow. Because of this heavy roughage feeding, presumably to cows not specifically of the dairy type, profits were in no case large, being in but a single case in excess of $10, while three cows were fed at a loss. The average profit attained was less than $5 per cow.

The test operator says concerning this herd:

"The owner has a good farm and some money. He states, however, that he cannot make the farm pay its expenses. The feed consisted of timothy hay, mixed feed and corn-meal. The cows were kept short of hay during the first of the winter, while in the spring, finding he had hay to spare, he fed hay excessively even when the cows were on the best of pastures. The cows are large Holsteins. The two best cows are old red cows, containing, apparently, some Shorthorn and some Devon blood. There has never been a bag of proteinous feed upon the farm."

A large herd, seriously in need of weeding out; tending to run dry rather long; fed a fair amount of roughage but rather lightly on grain. One-fourth of the herd failed to pay the feed bill; another fourth made a profit of less than $5 per head; and but one in ten made in excess of $10 per head.

The test operator says concerning this herd:

"This herd contains representatives (grades) of all breeds of cattle. They had only about half enough to eat during the winter and the pasture was very poor. The cows are small sized and at least half of them far along in years."

Concerning a herd which made relatively large profits on light feeding the test operator writes that,

"The ten best cows of a herd of about twenty were tested. Some of them were very good cows — grade Jerseys — and the silage was very good. The dairy was not fed grain or green feed during the summer. This year the owner is doing better by his cows and in two months some have made more than half what his cows averaged for last year."

Association B

A high-grade herd of twenty-nine cows, half of which made more than 250 pounds of butter fat and seven-eighths of which made over 200 pounds of butter per cow. These cows were fed rather moderate amounts of roughage, costing on an average about $17.75, but were fed heavily on grain feed. However, despite this high grain feed usage, approximating $24.30 per head the largest usage by any member of this association, these cows made on the average more profit by far than did any other herd. Twenty-seven out of twenty-nine, or approximately nine in ten, made a profit in excess of $25 per head over and above all charges for roughage and grain; while one of the other two fell short of the $25 limit by but 33 cents. This record is respectfully referred to the consideration of such as decry the purchase of grain, and may very well be compared with the next one.

The test operator states that a registered bull has headed this herd for years, and that the Babcock test has been used consistently for years.

A herd of twenty-five cows seventeen of which completed the year's record. Only three of the entire twenty-five showed a profit, aggregating for the entire year $12.31, while twenty-two achieved a loss, aggregating $233.28. The highest milk record is 3,300 pounds — the highest butter record (same cow), 118 pounds. Only two cows gave more than 3,000 pounds of milk; three more than 100 pounds of butter fat; four more than 100 pounds of butter. The roughage was valued at about $25 per head or $7.25 more than that fed to the cows in the herd above cited. Its valuation alone is in excess of the sales value of the butter fat yields in three-fifths of the cases. The average cost of the grain fed the cattle was less than $5 a head.

A herd of twenty-six cows, twenty-two of which appear to have completed the year's record. Nearly one-half of these gave less than 100 pounds of butter fat, and all but three, less than 150 pounds. The feeding, however, was sufficiently chary (an average of $18 a head for roughage and $8 for grain) so that twenty of the twenty-two made a profit. It is an open question whether they might not have made larger profits with more liberal feeding.

A herd of fifty-two cows, forty-three of which appear to have completed the year. Only nine of these cows made in excess of 175 pounds of butter fat. Apparently the herd was heartily fed, for the roughage costs average about $22 and the grain feed about $21 per head. The relatively slight response made by this herd to such feeding affords an unsatisfactory outcome as regards profit. Over half the herd (twenty-nine of fifty-two) made losses; eleven of over $10 per head, and twenty-one of over $5 per head. The profits on butter fat over feed costs made by the twenty-three cows which proved gain makers are relatively slight, only seven showing as much as $10 profit per head. The net result is a loss of nearly $100.

Association C

A high-grade herd of thirty-one cows, twenty-five of which made more than 250 pounds of butter fat apiece; fifteen more than 300 pounds; six more than 343 pounds (which is equivalent to 400 pounds of butter on the one-sixth surplus basis); while one cow made 495 pounds of butter fat or the equivalent of 578 pounds of butter. This cow ate $37.19 worth of roughage and $26.41 worth of grain feed, and made, at 31.2 cents a pound for butter fat, a profit of $90.72. The only cow in the entire dairy which made less than 125 pounds of butter fat made 124 pounds in five months and was sold. The only other cow making less than 200 pounds of butter fat made 198 pounds in seven months and was sold. Twenty-nine out of thirty-one cows made a profit in excess of $25 per head; twenty-eight in excess of $30; eighteen in excess of $40; ten in excess of $50; while one cow made $65 and another almost $91 profit. This herd stands No. 1 in record among the three associations.

Twelve cows completed the year's record in another dairy. Seven of them made 200 or more pounds of butter fat, and five of the seven in excess of 250 pounds (an equivalent of 300 pounds of butter apiece.) Yet notwithstanding the high production in this herd, the outcome is not a very favorable one. The roughage feeding was very heavy, approximating $45 per cow and the grain feed, which commonly is lowered when roughage feeding is heavy, was in excess of $20 per cow. These heavy rations resulted in a total feed bill for twelve cows of $787.96 as against an income for butter fat of $812.41 a gain of only $24.45 on twelve cows, six of which were kept at a loss of $52. Three other cows were kept for a portion of the year and were also serious money losers. Both cows and methods are said to be poor. This year the same cows are being fed better, i. e., more rationally.

> Another herd contained eighteen cows which completed the year's record. Three made more than 200 pounds of butter fat; seven, 125 pounds or less. The roughage fed them averaged to cost about $27.50, the grain about $8.50. Six were losers for small amounts, about $15 in all, and twelve made a profit of about $170. It is said that the interest taken in this herd by its owner is not great.

Now finally, the question may be well asked whether cow testing associations, having been started, continue. In other words do the members stick for the second and succeeding years? The sellers of patent medicines are quite frank in saying that their wares are not successful unless they create a need upon the part of the users for continued purchase. They must, to put it frankly, even brutally, create a habit. A single sale cuts but little figure. It is the repeated sales which afford the profits. A medicine which does this is technically known as a "repeater." Now are cow testing associations repeaters? Yes and no. In some cases, notably in Michigan, they have been going now for some years. In other states they are still young. Mr. A. J. Glover, the assistant editor of *Hoard's Dairyman,* reported at the National Dairy Show in 1909 as to the attempt then recently made to renew for a second year the Fort Atkinson (Wis.) Cow Testing Association. This association, he stated, contained thirty members during the first year. At the annual meeting ten appeared, and of those ten only two declared their intention of signing again for a second year. Some of the reasons assigned were interesting. One dairyman stated, "My year's experience has demonstrated that I have good cows. What is the use of testing further?" Another one argues in another fashion, "My year's experience has demonstrated that I have mainly poor cows, cows which are losing me money. And now, because of my membership in this association, I have lost a dollar per cow more than if I had not joined, therefore, I shall not go on." (The logic of this answer is commended to certain schools of philosophy.) Another man is troubled with an over-sensitive conscience and says, "I cannot now sell my poor cows for I know which ones they are and it would not be a proper thing for me to do." A fourth one says, "Ignorance is bliss." Others gave absolutely no excuse whatever. Such a result, after a year's conscientious work, must be extremely discouraging, but should be simply an incentive to the earnest advocate to peg away. In time the scheme is bound to win out. Rome was not built in a day, and conservatism is difficult to overcome.

Associated with the conduct of cow testing associations may very well be linked the conduct of a breeders' association, the employment of community bulls, the issuance of certificates of high-grade production to cows giving large yields, regardless of whether or not they are registered animals; some scheme for the identification of their heifers, etc. As intimated earlier in this article, these associations form excellent centers for the cooperative purchase of feed, fertilizers, of seeds and of household supplies. The experience of one of the Vermont associations in saving enough in cooperative purchase to pay the entire expense of running the association is a case in point.

DISCUSSION

Question.— How would you proceed to organize a cow testing association in a county?

Answer.— If two or three people are interested, they may write to the Department of Agriculture, Albany. Assistance will be given to arouse interest among the farmers of your locality, and instructions and blanks furnished for starting an association.

Question.— Do you remember what the average increase per cow was in the cow testing associations that had been run two years or more?

Answer.— My recollection is that it was 1,000 pounds for each dairy.

Question.— Is the evidence from these cow testing associations sufficient to advance a thorough-bred cow into the advanced registry class?

Answer.— It is sufficient and is accepted by the Jersey and Ayrshire breeders' associations. I think you will find that they will be accepted by the Guernsey associations also.

Question.— When butter is sold at a price not above the average and an economical ration is fed, is a cow giving less than 4,000 pounds of 4 per cent. milk profitable?

Answer.— Unless a cow gives at least 5,000 pounds of 4 per cent. milk, she is not worth keeping. On a fair and accurate test and a record of every cost, with hay at $15 per ton, a cow cannot be kept for less than $120. It is double what the ordinary farmer estimates it.

ORIGIN AND NATURE OF THE SOIL

By F. E. Gott

Farmers' Institute Conductor

Soils are composed of rock particles, more or less finely pulverized, and organic matter. The reducing of the oldest rocks into a fine material, commonly called rock flour, was a long, slow process, and in order to form any conception of the methods by which this pulverization was accomplished, it will be necessary to go far back in the history of our planet, the earth.

Assuming, as we are led to believe by the first verses of the first chapter of Genesis, that there was a time when water covered the face of the earth, and from the great Creator of the Universe this fiat went forth: "Let the waters under the Heavens be gathered together in one place and let the dry land appear," this great change was not wrought in an instant of time, but by the natural development of a stupendous and carefully conceived plan. We may assume that in consequence of an upheaval of the rocky floor the primeval ocean or, more likely, on account of the recession of the ocean level, it is possible that a single rock, higher than its neighbors, was the first to appear above the tumultuous waters, marking the advent of the first dry land. Doubtless, on our own continent this phenomenal appearance took place somewhere in the neighborhood of the St. Lawrence River or between Georgian Bay and Labrador.

The first boulder, the pioneer of the so-called Laurentian System, belonging to the class of sedimentary rocks, probably granite, was not the original solid crust of the earth, but was made up of the debris (or cinders) of still older solid matter. The important thing about it, however, is that it contained in its structure all of the mineral elements of plant food that we find in our soils of the present day.

Immediately began the disintegrating process by which our pioneer rock was gradually ground into fine particles; and this mighty work was accomplished by natural forces, which to us at first sight may appear unimportant and slow, but compared with which, the most powerful machinery known to man is insignificant. Among these natural reducing forces were:

First, the beating of the waves of the primeval seas against the rocks, tending slowly but surely to reduce their hard bodies to exceedingly fine particles — note the encroachment made by the waves of the Atlantic along her rock-bound coast. Second, the battering of rain-drops, resultant rivulets coursing down the rocky sides and consequent erosion. Third, the sand-blast particles of sand blown from neighboring rocks (for other rocks were rising from the depths as time went on). The impinging of these flying particles on an exposed surface would gradually wear away the hardest material. Fourth, chemical decomposition and weathering, and later, the powerful action of frost and the decomposition caused by mosses, lichens and other vegetable growth. Much later in the earth's history came the tremendous grinding of the glazier, when great boulders caught in their movement were ground into flour, even as wheat is ground between the upper and lower stones of a mill.

What became of the product of this incessant grinding process? Naturally it would wash or gravitate down the slope of the rocks until the shore was reached, the coarser particles settling near by and forming a sandy beach, where still further reduction would continue to go on. The finer particles would be carried in suspension in the water, but eventually obeying the law of gravitation would settle to form the mud of an ancient sea bottom.

Great changes had taken place in the sea itself. Gradually it became cooler, then came life, and countless hordes of protozoa, finding a habitat congenial to their needs, disported themselves here and there in search of marine algae and other minute vegetable forms which constituted their food. These primitive forms of animal and vegetable life — we know not whence they came — lived their humble lives, performed the functions for which they were intended, reproduced their kind, and then the little germ of life, which had actuated their tiny forms took flight, and the organic remains sank to the bottom to become mingled with the muddy sediment, thus adding another constituent to a material destined eventually to become what we call soil. Yet only the first few steps in soil making had as yet taken place. The continued recession of the water exposed the deposit at its bottom to the elements, and, in the course of time, this material was again transformed and again became rock. The same forces whose action we have endeavored to follow were again set at work and the former processes repeated again and again, until by the repeated grinding, moving and mixing, a homogeneous material resulted.

An important element was still lacking in the completion of a perfect soil. It needed more organic matter; nitrogen as well as potash. Let us assume that a process something like this took place. In a hollow on the side of a rock, a portion of the soil mixture we have described was deposited, and in this miniature garden the Creator planted a seed — the spore of a lichen, just one of the most lowly, insignificant forms of vegetable growth. The seed germinated and a feeble, moss-like plant came into the world. This little plant was destined to become an important factor in the perfecting of the soil. It lived, grew, performed its allotted function, formed many spores, thus reproducing its kind, and then gave up its life. But its organic substance, following the law of earth to earth, dust to dust, went back into the little handful of sand on the rock side, adding thereto the element of humus. Other plants grew, having the same history as this first humble little lichen. Thus, step by step through long periods of time, the oft-repeated process of grinding and mixing of rock material, then the incorporation of organic matter by similar slow processes, resulted in a perfect medium for the growing of all plants and vegetables and for the welfare of all mankind.

How and in what manner this manufactured soil was distributed, transported and finally deposited in the situation it now occupies, is quite as interesting and remarkable, but seems to be beyond the scope of this article.

SHALL WE USE GROUND LIMESTONE OR CAUSTIC LIME?

By J. F. Barker

In Charge of Soil Investigations, New York State Agricultural Experiment Station

The chief benefit derived from the addition of lime to a soil is generally conceded to be due to the basic properties of the lime, rather than to the supplying of calcium as an element of plant food. The latter function may sometimes be needed, but the extent to which this is generally true remains to be shown by experiments. For either use it is profitable to apply lime to only such soils as are practically devoid of calcium carbonate, that is, nearly neutral or acid soils; such are very common in all our states having an annual rainfall of more than thirty inches. Those best acquainted with New York conditions say that at least two-thirds of the cultivated land is in need of lime. The importance of adding this material when once it is needed can scarcely be overestimated. Thus hear the following statement by Director Thorne (Ohio Circular 79): "When the land begins to need lime it is a waste of time, energy and money to continue to cultivate it until this need is supplied, for an economical use of every other fertilizing material, including manure, depends upon the lime supply; if that is deficient everything else must fall short of its possible attainments."

A question most frequently asked in this state regarding the application of lime is, "What form is best to use?" It is requested that this discussion be mainly on that phase of the subject. At the outset, let us reflect that in deciding a matter of this kind a few facts are worth more than a multitude of opinions. The following are epitomized results of all field experiments in this country, published to date, dealing with the comparative value of burned lime and carbonate of lime:

MARYLAND EXPERIMENTS, 11 YEARS' RESULTS (1895–1906).
(Maryland Bulletin 110.)

TREATMENT	PRODUCE PER ACRE IN ELEVEN YEARS Corn, 4 crops	 Wheat, 3 crops	 Hay, 4 crops
Caustic lime, 1,400 pounds per acre, applied once in 11 years	128.6 bu.	33.7 bu.	7,637 lbs.
Carbonate of lime 2,600 pounds per acre, applied once in 11 years	148.4 bu.	42.3 bu.	7,930 lbs.
No treatment	97.5 bu.	31.9 bu.	5,200 lbs.

PENNSYLVANIA EXPERIMENTS, 25 YEARS' RESULTS (1882–1906).
(Pennsylvania Bulletin 90.)

TREATMENT	[1] CROP VALUE PER ACRE EACH 4 YEARS
Caustic lime, 2 tons per acre, each 4 years	$58.82
Ground limestone, 4 tons per acre, each 4 years	68.80

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[1] Corn, oats, wheat, hay grown in rotation.

OHIO EXPERIMENTS, 6 YEARS' RESULTS (1905–1910).
(Ohio Circular 114.)

TREATMENT PER ACRE EACH 3 YEARS	[2] VALUE OF INCREASE PER ACRE EACH 3 YEARS	NET GAIN PER ACRE EACH 3 YEARS
Caustic lime, 1,000 pounds; manure, 8 tons	$10.42	$7.42
Ground limestone, 1,780 pounds; manure, 8 tons	11.51	8.81
Air-slaked lime, 1,780 pounds; manure, 8 tons	11.36	6.06
Hydrated lime, 1,320 pounds; manure, 8 tons	11.27	7.27

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[2] Corn, oats, clover grown in rotation.

In the Ohio test the land was in good condition at the beginning of the experiment, yielding 60 to 70 bushels of corn per acre, so that the chief problem has been to maintain the yields. Lime and manure have not only maintained but decidedly increased the yields.

In the Maryland experiments, both forms of lime were derived from oyster shells, which have nearly the same composition as limestone rock. (In fact, it is a matter of common knowledge that nearly all limestone is formed from shells.) The land used in this test was very poor, but the average yields were uncommonly low on account of one year of both corn and wheat having been almost a complete failure. Each form of lime was tried on duplicate plats, but if either of these be taken separately for comparison, the difference is practically as great in favor of the carbonate. The latter also gave better results the first year and nearly every year thereafter. A noticeable thing about this experiment is that the lime was applied in rather a small quantity and that only once in the whole eleven years.

This is in contrast with the much larger amount applied every four years in the Pennsylvania experiments. The soil on the Pennsylvania field is shown to have been but slightly acid at the beginning of the experiments, the lime requirement determinations giving only 300 or 400 pounds of CaO necessary to neutralize the acidity in the surface soil of an acre. The lime added, then, is for this purpose much in excess; but, if as some emphasize, the purpose of lime is not to correct acidity but to furnish basicity, then it would seem the desired effect was secured. On these lime plats no special effort has been made to keep up the organic matter content, and so the effect of both forms has probably been less than if more humus had been applied. On other plats, however, the same amount of caustic lime was used in connection with twelve tons of manure per acre every four years. The results were, that during the first eight years of the experiment, the lime and manure plats gave lower yields than other plats receiving the same amount of manure and no lime. During the remainder of the test, the lime has increased the value of the manure, though not enough to pay for its use. It seems probable that the further development of acidity in the plats receiving manure alone is the cause of their dropping behind those receiving caustic lime and manure. Unfortunately, in this experiment no test has been made of lime carbonate and manure in comparison with caustic lime and manure. As an average of the whole experiment, it will be seen that twelve tons of manure and two tons of caustic lime per acre gave nearly the same result as twenty tons of manure alone. From this the statement is sometimes made that a ton of caustic lime has given the same returns as four tons of manure. But such is plainly a fallacy, for the value of manure decreases rapidly as the application exceeds twelve tons per acre; so much so that, while the first twelve tons have been worth $2.16 each, as measured by the increase in crop yields, the next eight were worth only thirty-six cents per ton.

After the Pennsylvania experiments had been in progress for sixteen years, the soil of each of the four plats in each test was sampled for analysis, and it was found that an average of the four plats receiving ground limestone showed the soil to the depth of nine inches to contain per acre 2,980 pounds of nitrogen and 37.9 tons of organic matter; while only 2,600 pounds of nitrogen and 34.2 tons of organic matter remained in the soil treated with caustic lime. If we assume that the composition of the two sets of plats was the same at the beginning of the experiment, we then have a loss of nitrogen and organic matter, due to the destructive action of caustic lime over that of ground limestone, to the extent of 380 pounds of nitrogen and 3.7 tons of organic matter. This is equivalent to the nitrogen in 38 tons and the organic matter in 15 tons of fresh barnyard manure. However, this is the action not on such easily decomposable material, but on the more inert organic matter and nitrogen in the soil.

The Ohio experiments furnish just the data which these first two lack; namely, a comparison of the two forms of lime applied in more normal amounts and in connection with much organic material. They also include in the comparison air-slaked and hydrated lime, all forms being used in such proportions as to carry chemical equivalents of lime. It is seen that the carbonate has been the most effective and the most economical.

From all these experiments, it is plain that carbonate of lime has given better results than its equivalent of burned lime. It has given better results even in the first few years following its application; all this notwithstanding the common opinion that the greater fineness and the more active form of the burned product would make it more available. Note also that Maryland and Ohio did not apply the carbonate of lime in double the weight of the freshly burned lime, as is so often considered in comparing the two, but in about the proportion of 100 to 60. Nor has the ground limestone been so fine as is commonly thought necessary. Of that used in the Ohio and Pennsylvania experiments, 100 per cent. passed only a 10-mesh sieve, and as much as 40 per cent. did not pass a 50-mesh sieve.

Good grades of ground limestone can now be obtained at many points in this state at less than $2 per ton at the quarries, and when the demand for it becomes more general, it will be found on the market at $1.25 per ton or less, as is now the case in so many other states. Most of the cheaper grades of burned lime for sale are the refuse products of the kilns and are partly hydrated and carbonated. Letters from a number of long-established manufacturers who burn lime say that they cannot make a business of selling that material at less than $4 per ton at the kiln and at the same time pay running expenses, not to speak of any profit. Burned lime to be at all convenient of application must yet be ground; and this material cannot be shipped in bulk, but must be put up in paper bags. Five dollars per ton is about as low as such a product can be obtained from any kiln. Railroad companies have a lower freight rate on ground limestone than on burned lime, because the former can be handled easier and with less risk.

Considering all these facts and also the greater comfort with which ground limestone can be handled and stored, why should we not as a general rule advocate the use of the natural product in preference to the caustic material? There is also another phase of the question which we should not overlook, which has to do with the conservation of our natural resources. Since ground limestone is better for our soils than the burned product, it follows that to use our precious coal supply in burning lime for this purpose is nothing less than a flagrant waste.

SOIL INVESTIGATIONS[1]

By E. O. Fippin

Professor of Soil Technology, Cornell University

In connection with the use of lime on the soil, two series of investigations were undertaken at the College of Agriculture, designed to give more accurate information as to the relative value of the different forms of lime. One series of these experiments is being carried out on the College farm, using a great variety of forms of lime. The first crop grown, which was in 1911, was sorghum. No conclusions are drawn from the first year's work, but it may be of interest to know that the largest crop yield was obtained where the largest quantity of caustic lime was applied. This was at the rate of 3,000 pounds per acre.

In a general way, the returns from the ground limestone were less than those from caustic lime, and the magnesium lime gave somewhat smaller increases than pure calcium lime.

The second lime series is being carried on in pots in the greenhouse on two types of soil,— the Volusia silt loam (hill land) and Dunkirk clay loam from the University farms. The different forms of lime are combined with various manures and fertilizers to determine their combined effect. The first crop grown was millet in preparation for the rotation to follow, and as this crop does not respond particularly to lime, results permit no statement to be made concerning its effect.

Attention was called to several important results of the fertility investigations upon the University farm. First, the growth of a leguminous crop with a non-leguminous crop increases the protein content of the non-legume; it also produces a larger total yield of the non-legume. The increase in production of protein in a non-legume grown with a legume, as compared with the same crop grown alone, was 8 per cent. for timothy with alfalfa; 43 per cent. for timothy with red clover, and about 10 per cent. for Canada peas with oats. The increased yield per acre in the case of oats and oats and peas was approximately 30 per cent., and upon the basis of these results the increased acre production of protein per acre from the combination was approximately 30 per cent.— a very decided increase in total feeding value. The results of this experiment are described in Cornell Bulletin 294.

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[1] Conference on Soils at the Normal Institute, 1911.

Second, it has been observed that roots of certain crops stimulate the production of nitrates in the soil, irrespective of their relation to tillage. The amount of nitrates in a soil growing corn is equal to or larger than the same soil adjacent, but uncropped throughout the growing season, in spite of the large draft of the crop upon the nitrates. As the roots of the crop reach maturity and become dormant, there appears to be a slight depressing effect upon the nitrate production. Similar results were obtained in the case of potatoes.

It was observed that where alfalfa had grown, the production of nitrates in the soil was materially stimulated for at least two years after the crop was entirely removed, as compared with adjacent plots which had been previously cropped to timothy. The grass and grain crop, particularly oats, seemed to have a much less stimulating effect than the tilled crops, and, in fact, to inhibit nitrate production.[2]

Third, the first year's study of the drainage water from the concrete tanks shows a large increased loss of total soluble salts on the uncropped soil as compared with the cropped soil. The loss occurred chiefly during the winter months. The constituents most largely removed are lime, nitrates and soda. The lime and nitrate seem to be removed in combination, and on a soil kept bare throughout the summer, the total loss per acre amounted to 822 pounds of calcium nitrate and on the cropped soil, 172 pounds per acre. It would, therefore, appear that the presence of an abundant supply of both materials promotes the mutual loss of these when leaching occurs, emphasizes particularly the importance of maintaining the supply of lime in connection with the organic content of the land, and the unwisdom of the fallow system.

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[2] The results of these investigations are described by Dr. Lyon and Dr. Bizzell in the *Journal of the Franklin Institute*, January and February, 1911.

IMPROVEMENT OF PASTURES

By J. W. Sanborn

Farmers' Institute Lecturer

When an ancient Jewish writer desired to picture a state of ideal happiness for the pastoral people to whom he spoke he likened it to the condition of flocks led into " green pastures." Green pastures, luxuriant and composed of mixed herbage, has long been popularly regarded as supplying the ideal stock feed, both in point of economy and efficiency. Strictly good pastures are but a reminiscence. Time was when the fathers wintered their cattle indifferently and depended on the fresh pastures to make a rapid growth and to fatten quickly and well. Now, good feeders make a better growth in the winter than in the summer, and depend upon grain feeding when the better class of beef or the best flow of milk is to be gained and continued.

When a resident of the blue-grass section of Missouri, I was told of pastures that would make their three pounds of growth per day for fatting steers, when supplemented with grain, and more growth was not uncommon, passing 100 pounds per month. The grain added something to the growth, no doubt, but was used more for the purpose of securing quality than quantity. A good Leicestershire pasture in England excels this record. Age has told adversely on the pastures of New England, and Nature, in her efforts to keep up an equilibrium, rotates crops by growths of weeds and bushes. These are accompanied by shade that impairs the growth of grass and injures its quality, for crops in the shade are inferior in palatability and nutritive value. The grasses in an old pasture are apt to be of the inferior sorts low in palatableness, therefore eaten in less quantity and having inferior growing capacity. This trouble is accentuated by the labor essential to secure the needed bodily requirements. In New Hampshire it will require at least five acres to carry a cow for but a part of the season, and a tedious day's labor to secure a living. This all means low milk flow except in the month of June. Here you have better pastures, yet of reduced capacity and quite below the standard that should be set.

PASTURES A LIMITING FACTOR

The decline of our pastures is one of the important factors that has had to do with the decline of farm values, the departure of the old farm families to other industries and locations, and the general dissatisfaction with agriculture as a vocation in the East. Pastures are a marked illustration of the power of habit and the influence of a name. We are content to accept from pastures a carrying power of a cow half fed on three to six acres during four or five months, said cow giving but a partial fraction of what might be secured if rightly cared for. If we reduce the full carrying power of an acre for a full year, we find that it requires for the average pasture of the East, including New England, ten to twelve acres. The higher type of farming now aimed at asks each acre to carry a cow a full year, exclusive of grain. Under the latter system the cow is highly nourished with little effort and can turn her powers to production. On many farms, probably the majority, the carrying capacity of an acre in pasture could be multiplied at least eight to ten times. Granting this, light is thrown upon the fact that our farms are believed to be inadequate to give the income required to maintain the modern farm family in accordance with the standards of living prevailing in our cities, and with the desires of our sons and daughters. Farms should give the standard of living demanded by the times and the culture and opportunities of the age, otherwise farming as an industry will be left to men of inferior ambition.

The trouble with the times in its relation to farming is to be looked for largely in ourselves. The rapid settlement of the West and its flood of cheap food discouraged us. We drew in on tillage crops, the application of capital, labor and plant food, pursued a passive type of farming, increasing our pasture area and permitted these pastures to slide down the plane of fertility without an effort to maintain them. The effect of this was a narrowing income in an age of expanding expense account. The fixed charges of the farm grew and grew, especially the family expense, until the cost of labor, fertilizers, grain, machinery and buildings, came to equal the gross receipts, and at last failed to leave a margin adequate to give the type of living and the dollars over for a rainy day that farmers felt was their need and due. The remedy for this state of affairs is an enlargement of income. This will come and come readily by deepening the processes of the farm, but more especially by broadening its efforts. Every acre should be laid under the fullest powers of the mind and capital of its owner. No place offers such opportunity for expansion as these passive pasture acres; they at once admit of more than doubling the income, indeed, of tripling and often quadrupling the gross receipts of the farm. Hence it is that I feel that the weak spot of the farm is the pastures.

THE UNOBSERVED OPPORTUNITY FOR IMPROVEMENT OF OUR PASTURES

Probably one of the most important losses due to poor pastures is generally unobserved. Everyone is cognizant of the lessened milk flow that begins in the month of July and continues until the cows come to the barn. Few keep the milk flow up to the normal of good winter conditions or those of June. Pasture appears to be so much cheaper than grain, that there is a reluctance to feed grain, and most farmers hesitate to go to the mows in which is stored the winter's supply of food. There is so far an appearance of saving by this policy, that the practice of enduring fading pastures is a common one rather than the exception.

But during this poor pasture period, ending in late fall months, and of insufficient feed, something else is being lost other than milk. The scales, if used, would show a continuing loss in the weight of the cow. This means much. Not only has a thousand pounds of milk been the forfeit, but this continuing loss is one that must be returned to the cow before she can renew her normal milk flow, which will not be until after calving. The loss of milk flow, accompanying the loss of weight, will be continued, though in a lessening degree, until the full loss of 100 to 150 or more pounds of weight is restored. The most careful experiments in stock feeding show that under the best conditions it requires ten pounds of food to make a pound of growth. Thus a thousand pounds or more of food must be fed in the barn before the cow has returned to her normal weight and stored up the energy for a full milk flow. Nothing has been saved, then, by short pastures or by withholding food at the barn during short pasturage. On the contrary, the lessened milk flow during the short pasturage has not been made up, nor could it possibly be made up, since the period of drying preceding another calving is attended by a naturally decreasing milk flow. Our poor pastures are at the root of much of the short milk production for which the average herd is credited, and, as stated, it is the chief factor in the low income that has made farming unpopular.

HOW TO IMPROVE PASTURES

There are several methods of pasture improvement that I shall briefly discuss, but I desire to state at the outset that there is one royal road to pursue when it is possible. Every acre of the pasture that can well be made subject to the plow should be forced to give the full return of that field area by being placed in the regular crop rotation. This is my course. It involves, of course, more cost, but this is warranted by the greater productivity and also by the fact that ground that is grazed will not carry as much stock as ground from which field crops are harvested. At the Utah Experiment Station I fed three lots of steers on three equal areas. One lot was grazed, one was cut and fed green in the stable, and the other was cut, dried and fed in the stable. The lot that was grazed required 28 per cent. more area to carry the stock a given time than the other two; or to put it in another form, the section that was cut and fed in the stable had 1,481 pounds of food remaining when the grazed lot was exhausted. This factor may not be the deciding one, but coupled with the greater productivity of a pasture kept under manures in a regular way, it has a marked bearing on the problem. At the end of an eight-year rotation, the pasture is grazed for eight years. At this date, the 8th of May, I have had 43 cows daily on 41 acres since the first of the month, and there is now an excess of food on the ground.

Land can be made to carry a cow to the acre for the months of the grazing period, and of course so carry her as to give better results than can be secured by the use of several poor acres for each cow; but a cow to the acre for five or six months is not satisfactory, nor is it the capacity of an acre under cultivation. As a second method, pastures can be treated with yard manure. This method has not been regarded feasible here in the East, since there is not usually enough produced to give the fields adequate fertilization, but they can be made productive by the use of fertilizers and kept so permanently. The continual droppings of stock on pastures, together with the natural decomposition constantly going on in the soil, represent nearly all the fertility taken from them yearly; there is but a small deficit to make good. It is the yearly accumulation of this annual deficit for a long period that has placed our pastures where they are, short in production and in the quality of that produced. With the fathers this loss was less than now, because they fed more for beef and the grazing was accompanied by the offal at all times. The stabling of cows carries more from the pastures than beef animals, and the loss is of a different character.

The carcass of an ox contains, per 1,000 pounds, 17.6 pounds phosphoric acid, but only 1.6 pounds potash or one-tenth that of the phosphoric acid. Milk is .19 per cent. phosphoric acid to .18 per cent. of potash and .53 per cent. of nitrogen. Into milk goes but one-sixth of the nitrogen of the food, one-fourth of the phosphoric acid and one-tenth of the potash. It will be seen that the fertilizing minerals taken from the soil by grazing steers is almost nothing, not more probably than the annual amount supplied by soil decomposition; but there is a continual loss of phosphoric acid, a material less in quantity in the soil by one-half than potash. Old pastures are minus phosphoric acid to a marked degree, and fertilization for them calls for the use of this material. This is why the early use of bone meal on English pastures gave very satisfactory results. I endeavor to use for my pastures a fertilizer containing a little less than one-half the nitrogen which would be applied for field grass, since the droppings afford some nitrogen, while Nature by various processes is providing more of this material than of phosphoric acid. Where cows are pastured, I use some potash, especially for river soils. Distinctively, pasture fertilization should consist of the free use of phosphoric acid, but this material should not come too freely in the form of soluble acid or acid phosphate, since too much of it is not good for grass. On a humous soil, or on an acid soil such as I have, floats are successful and have the merit of decided cheapness. The English and German custom of using basic slag for acid soils is the best practice for securing phosphoric acid; the lime in it tends to sweeten the soil and bring in clover, which is so desirable for pastures. As a source of nitrogen, nitrate of soda (unless it is used as an annual application) should be avoided for it is soon gone. My practice shows that it is better applied twice — in the spring and at midseason.

The amount of fertilizer to be used to the acre will be determined by the condition of the soil. For improving poor pasture, it is well to use a half ton. On sour soils this had better be mainly basic slag, with 100 pounds sulphate of potash, 200 pounds fine ground tankage and 50 pounds nitrate of soda. What little nitrogen supply is required should come as an annual supply or, in case of the free use of tankage, once in two years. After the first heavy supply, annual applications need be but small in amount, which can be determined best by observation of the individual pasture. Few will care to make yearly use of fertilizers for pastures. On alkaline pastures, bone meal, although this form of phosphoric acid comes high, and muriate of potash may be used instead of basic slag and sulphate of potash.

The partial fertilization of a pasture will compel its full fertilization. Cows will graze close where fertilizers are used. The palatableness of the grass is much improved by fertilization and, better still, the kind of grasses growing will gradually change. I find it to vary under differing methods of fertilizing.

FEEDING STOCK AT PASTURE

Pastures may be improved and finally made rich by feeding from the barn in part or, in case of growing or fatting stock, by feeding while in the pasture. The production of meat here and in New England is to come back again as a feature of our farming. In this case, feeding grain in pasture will follow. This practice is still in vogue in the rich blue-grass pastures of Missouri, where for a time I was familiar with beef growing. There I have seen corn constantly before the steers in large troughs from which they fed at pleasure. The literature of pasture feeding with reference to the fertility accruing to pastures is fairly rich. I have not the data with me, but I am familiar with many tests of the relative fertility of pastures on which sheep or beeves have been fed various foods. These trials not only show that pastures on which grain feeding has occurred are richer than those on which it has not been practiced, but that the fertility or carrying capacity for stock is greater after some foods than others. Cottonseed meal, as might be expected, adds more to the pasture than other foods.

The rotation of crops with pasturage, as before noted, makes feeding at the barn compulsory, both for grain and coarse foods. This practice will by patience restore pastures to more than their pristine fertility and carrying capacity, and it has also other recommendations than restoration of fertility. It keeps up the milk flow of the summer season so far as food in plentitude can do so. It is better to give some dry food at the pasture rather than all green food, as it keeps the bowels in better condition and the flow of milk more regular.

MIXED PASTURE GRASSES

It is well known that in England, where are some of the best pastures in the world and the best cared for, it is the custom to use mixed grasses for grazing. English agricultural papers carry advertisements of pasture mixtures, and much is made of the practice of right combinations of pasture varieties. For a century or more, the literature of pasture seeding according to the English system has been advocated, and some of our seedsmen offer mixtures, yet the practice of reseeding pastures and with special mixtures is not common in this country. Those who have tried commended mixtures report that in our climate but a very few varieties are lasting under grazing.

At the Utah Experiment Station I sowed nine varieties on separate plats and the whole list in one combination. These plats were grazed off and results showed that the mixture gave an important gain over the single varieties. The gain of the animals fed on the mixtures was 265 pounds; on meadow fescue, 254 pounds; on English rye grass, 236 pounds; on orchard grass, 227 pounds; on tall oat grass, 222 pounds; on timothy, 208 pounds; on alfalfa, 192 pounds; on blue-grass, 149 pounds; on redtop, 111 pounds; and on meadow foxtail, 108 pounds. This is not given as conclusive. The seeding, or rather the stand, was imperfect, and all of the plats were under irrigation, creating conditions quite different from those here. Observing the data and the trial closely, I became convinced that for a short-time pasture, the rank-growing grasses were more productive of gain of stock, and that mixtures were more productive than single crops. The final condition of these trial plats I do not know.

One of the good effects of rotation of field crops with pastures will be found in the fact that for a season we may deal safely with very productive grasses. For permanent pastures I do not hesitate to commend mixtures, but what ones I cannot say. Redtop, orchard grass and blue-grass stand grazing well. The list given above formed a nice first year's growth, but whether or not they would all thrive under New York conditions must be ascertained by practice. Of course there may be added clovers — white and alsike.

GENERAL SUGGESTIONS

It scarcely need be said that a new pasture sward should not be grazed the first year, the formation of a mat and the thorough rooting of the grasses should be allowed. It is now being shown that over-grazing is a bad practice, and that it is especially so when the pasture is left closely grazed at the end of the season. We know this with regard to meadows, but somehow think that pasture grasses are not subject to the same laws of plant life. To a great degree the principle applies to pastures as well as to fields. It is better for the stock to have some material left over for early spring and so have a mixture of the old and new, avoiding in some measure the scouring caused by going at once from dry to green food. Limited use of pastures permits feeding a little later in the fall and a little earlier in the spring. In the western state to which I have alluded, it is common to hold ungrazed or lightly-grazed areas for so-called winter pasture. This enables late and early pasturing.

I am often asked what shall be done with those pastures that are too rocky to plow and reseed, and that, of course, cannot be placed in the rotation with fields. Vegetation to a large and remarkable degree follows the method of fertilization. Some pastures run to June-grass, others to clover, others to timothy and others again to redtop. Bushes and weeds must go as the first requisite to a decent pasture. They not only rob the pasture, but shade it and give poor, watery, sour grasses. Cut and keep cutting them and sow fertilizers liberally. This will induce the growth of grasses and the crowding out of these pests of the pasture. Cows will, as all observers know, nip at the bushes and occasionally at weeds; between the fertilizers, the cow and the scythe, a good pasture will result in time.

DISCUSSION

Question.— Is it wise to divide a big hill pasture into two portions, using each portion 10 days alternately?

Answer.— If you divide the pasture, the cows have less distance to travel, the grass has to start a less number of times, and probably more feed is obtained from the ground so divided. You make less work for the cows to get a living. I believe in dividing the pasture.

Question.— What crop rotation do you use?

Answer.— We use an eight-year rotation, applying fertilizer each year, as follows:

YEAR	CROP
1	Corn for silage
2	Oats and peas
3	Clover
4	Potatoes
5	Hungarian
6	Timothy (We sell this crop)
7	Timothy (We sell this crop)
8	Pasture

Question.— Do you sow clover seed with oats and peas?

Answer.— Yes.

Question.— How late can you seed timothy in your locality and have it go through the winter in good shape?

Answer.— Early in September, after the fall rains come on.

Question.— How big a growth do you get that fall?

Answer.— We do not get a very rugged growth, but it stands our winter all right.

Question.— Would you consider lime waste from a tannery worth drawing five or six miles?

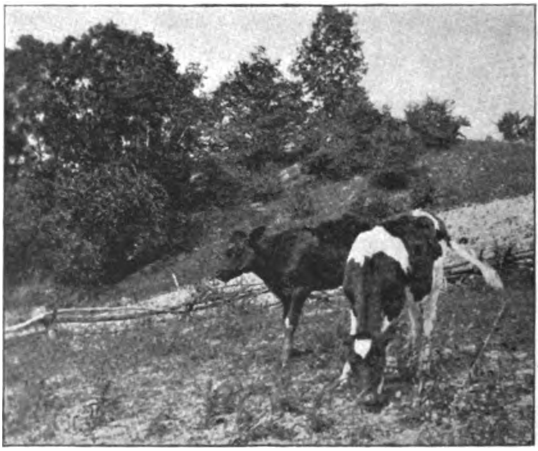
Answer.— Yes, generally speaking.

Question.— Can you recommend a good fertilizer for corn silage?

Answer.— Use practically the same fertilizer as for corn; about 15 per cent. nitrate of soda, 25 per cent. tankage, 16 per cent. sulphate of potash, and the remainder one-half phosphoric acid in the form of floats and one-half acid phosphate. I am using 10 loads of yard manure to 600 or 700 pounds of fertilizer. Large amounts of yard manure is unprofitable; use smaller amounts and use it often.

Question.— When sowing silage corn with a grain drill, would it be advisable to let all the tubes sow fertilizer?

Answer.— Yes, it would be all right.



THE IMPROVEMENT OF THE TIMOTHY CROP

By ARTHUR W. GILBERT

Professor of Plant Breeding, Cornell University

All plants are the product of two forces, heredity and environment. If one is to produce a perfect field of hay, the conditions of culture must be perfect and the seed must come from plants which have been selected for yield or other desirable characters.

CAN WE BREED TIMOTHY?

Even yet some people are inclined to doubt the possibility of breeding plants, but I feel sure that no enlightened audience of to-day would question this fundamental fact. We breed plants just the same as we breed animals. The same general laws of variation, inheritance and selection which apply in animal breeding, apply equally well in plant breeding. Indeed, after 20 years of actual experience in plant-breeding work, I think I may assert with little danger of successful refutation, that we can breed plants usually with much greater ease and with greater surety of securing marked improvement than we can breed animals.

The fundamental possibility of all breeding, be it with plants, animals or man, lies in the fact of the occurrence of variations. Generally speaking, no plant or animal is exactly like any other plant or animal. Horses of the same breed differ in their conformation, facial expression, length, height, ability to do work, disposition and the like. If we examine any number of corn plants of the same race and in the same row, we shall find that the individuals differ in a similar way, in height, number and length of nodes, length and width of leaves, length, diameter and number

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[1] Summarized at Schenectady Farmers' Days from experiments and address by Dr. H. J. Webber, of the State College of Agriculture.

of ears, number of rows of kernels, size of kernels and the like. It is known that many such individual variations are in large degree heritable and show plainly in the progeny. The transmitted influence of certain select sires are known to have greatly improved precertain breeds of cattle and horses. It is not only important that a racing stallion should have good form and speed himself, but it is of far greater importance that he should be prepotent and able to transmit his good form and high-speed ability to his offspring. In plants also, along with variation we must have transmitting power to secure permanent improvement.

Knowing that variations of various kinds occur in both plants and animals and that frequently such variations are in large measure transmissible to the progeny, we have the key to the main principles of breeding. Couple with this man's ability to recognize the best individuals for his purpose and his power to isolate the progeny of such good individuals and test their transmission of the good qualities, and we have the secrets of the breeder's art. A sort of glamour has been thrown about the subject of breeding, and not infrequently we invest the successful breeder with some occult power and pronounce him a wizard. This, I wish to emphasize, is a gross error. The principles of breeding are well-known laws of natural history, easy of comprehension. There are no secrets known to the breeder which are beyond the comprehension of the ordinary intellect, and the only apparently secret process is the exercise of trained judgment, based on years of experience. In this field as in any other, experience will aid judgment and enable the breeder to arrive at conclusions which may occasionally appear as intuition, but which in reality are simply judgments based on experience.

Almost all of our cultivated plants and animals are represented by numerous varieties and breeds. We do not cultivate simply wheat, corn or apples, but we grow Dawson's Golden Chaff wheat, Leaming corn or Baldwin apples. We have hundreds of races of corn and wheat and over a thousand varieties of apples. In cotton, oats, barley, peaches, plums, pears, strawberries, and indeed in almost all plants which man has domesticated, we find numerous varieties. Not so, however, in timothy, our greatest of all hay plants. Timothy is timothy simply. When we buy timothy seed

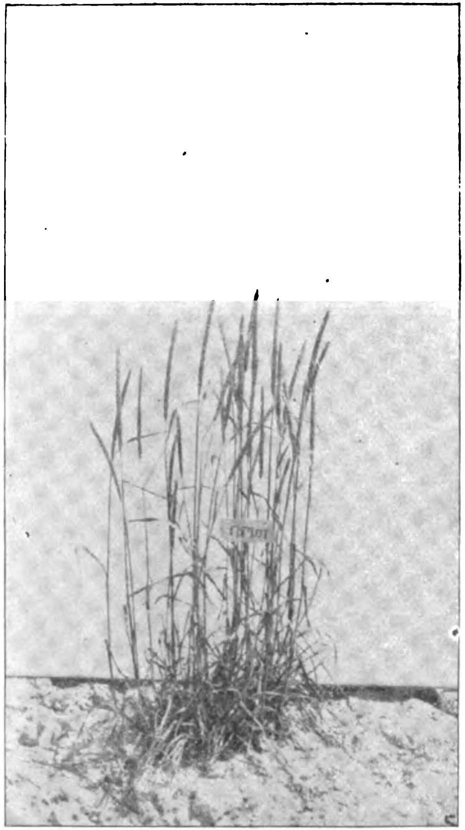

FIG. 63.—A SMALL WELL-YIELDING TIMOTHY PLANT.

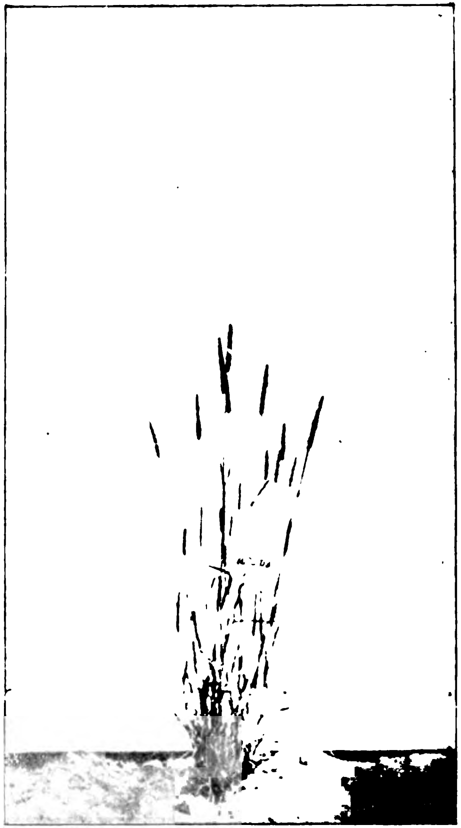

FIG. 64.—A VERY SMALL DWARF TYPE, A LIGHT YIELDER.

we do not ask for Excelsior timothy or Jones' timothy, we simply order timothy seed, and take seed from Illinois, Michigan, Iowa or any other place, if it is called timothy. Sometimes we ask for a guarantee that the seed is good, but by this we mean only that it will germinate. We do not concern ourselves with the all-important question of how much hay per acre it will produce. When we remember that hay is the second largest crop in value produced in the United States, and that timothy forms the bulk of this crop, it is difficult to conceive that this can be true, but such is the deplorable fact.

So far as the writer is informed, only one series of experiments in the breeding of timothy has been carried to a successful conclusion. Between 1895 and 1899, Dr. A. D. Hopkins, then of the West Virginia Experiment Station, made selections of good timothy plants observed in nature, and found that they could be bred into distinct varieties.[2] These varieties were later placed with the U. S. Department of Agriculture for trial, but have not been introduced into general cultivation.

It is clear that the most important problem before hay growers to-day is to secure improved varieties which are known to be adapted to certain local conditions and fitted to give the best hay under these conditions. Not until good varieties adapted to various regions have been secured, can we expect any very general improvement and increase in the hay crop of the country.

THE CORNELL EXPERIMENTS

The Cornell experiments in breeding timothy were started in 1903, under the direction of Professor T. F. Hunt, assisted by Professor Gilmore and Mr. Fraser. The writer was placed in charge of the experiments in the spring of 1907, and from that time until 1910, he was assisted in the work by Dr. C. F. Clark.

In order to secure various forms, seed was obtained from 231 different places throughout the world; 21 states, Canada, Japan, and nine European countries being represented. These seeds were germinated in sterilized soil and the little plants grown for a time in the greenhouse. They were later transplanted into field plats, 42 plants being grown from each lot of seed. In the field the plants were placed in rows 30 inches apart each way in order to facilitate the cultivation and allow the full development of each individual. Grown under such conditions, the plants gradually increase in size by stooling, and the most vigorous individuals in two or three years reach a diameter of from one to one and one-half feet. Little can be told regarding their characters until the second year when they begin to show clearly their mature character. No final conclusions can be drawn regarding the comparative value of the individuals until they have been under observation for four or five years.

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[2] Hopkins, A. D., Proc. Soc. Pro. Agr. Science 1895, pp. 29–33.

In 1905 certain distinct plants were selected from among this lot and open-fertilized seed retained which was used in planting individual test rows, the plants being handled and planted separately as in the preceding case.

The original planting of 1903 included about 20,000 different individual plants, while that of 1905 included 6,304 plants. A good stand was obtained at first, but a considerable number of plants died later from various causes. When the writer took charge of the experiments in 1907, there were probably about 20,000 different plants still living, and in most cases they were in excellent condition. At this time all of the plants had reached sufficient age so that their mature characters showed plainly and thus were in prime condition for studying the variations and choosing plants of different types.

VARIATIONS IN TIMOTHY

The variations in different plants of timothy cannot be observed plainly when the plants are grown under field conditions. It is necessary to have the individual plants grown alone with considerable space around them in order to study the variations. No one who has not studied such a field of timothy plants can comprehend the richness of forms presented. It is beyond the scope of such a paper as this to discuss all of the forms presented, but the accompanying illustrations will give some idea of the variation in those characters which are of most importance from a practical standpoint.

Yield depends primarily upon the height and diameter of the

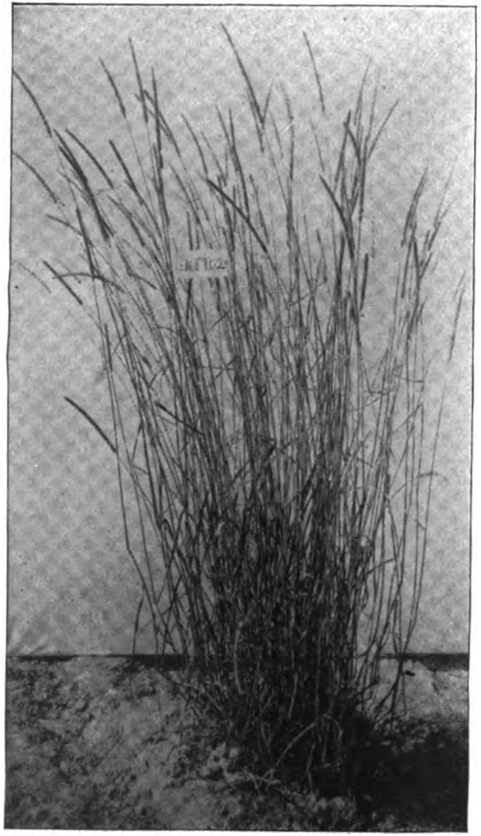

FIG. 65.—A TALL AND LARGE TIMOTHY PLANT, BUT LACKING IN FOLIAGE AND TOO OPEN.

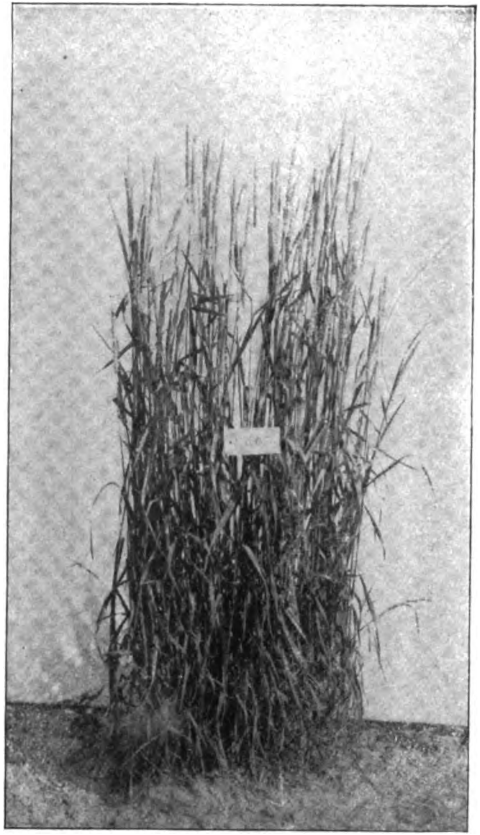

FIG. 66.—A GOOD TYPE OF TIMOTHY PLANT —TALL, ERECT, DENSE AND LEAFY WELL TO THE TOP.

plant and upon the density or number of culms developed and also on the size of each culm, size of head, number and size of leaves, and the like.

In height the plants ranged from 18 inches to 55 inches, as shown by Dr. Clark's summary. Some are veritable dwarfs and others giants. The diameter of the plant is independent of height. Some of the dwarf plants formed in a given period almost as large clumps in diameter as the tall plants. Many plants of three and four years of age will remain very small, showing very little stooling and producing each year only a half dozen or a dozen culms. Other plants stool abundantly and form clumps from a foot to one and one-half or more feet in diameter, with hundreds of culms.

In the original planting in 1903 the range of variation in yield of dried hay per plant was from .16 of an ounce to 21.60 ounces. If this difference in the yield of individual plants is transmitted, fields sowed with small and large yielders should show considerable difference in this important character.

The stems vary greatly in their diameters and ability to stand erect, some individuals showing a decided tendency to lodge.

The leaves vary greatly in length and width, but show little variation in number. The great majority of plants produce almost regularly five nodes with five leaves, but occasionally plants are found which develop normally from six to seven nodes and as many leaves, while occasionally also a lower number of nodes, three to four, is found as the normal number. This character, however, apparently means but little in the production of valuable sorts.

The heads also present a large range of variation in size and shape. They are long and short, thick and thin, smooth and simple, or rough and branched, and the like.

Plants differ also in density, position of leaves, color, time of ripening, resistance to disease and hosts of other characters more or less important. In season of maturity a variation of from two to three weeks is occasionally found, which is a very important character. The variation in susceptibility to rust (*Puccinia graminis*) is one of the most valuable characters observed. Some plants are badly affected every year, while other plants remain almost wholly free from this most serious disease of timothy.

The question of importance is whether these various individuals showing valuable characters will reproduce these characters, or whether they are hybrids or accidental variations which are unstable in nature. The selection and testing of such variations has formed the basis of the experimental work since 1907.

METHODS OF EXPERIMENTATION

The study of plants grown from open-fertilized seed was found to show great variation and little indication of a transmission of the characters for which the plants were selected. Timothy is normally a cross-fertilized plant, and when plants are grown in a mixed field where they are freely crossed with all sorts of pollen, this lack of transmission would be expected. A few heads protected from cross-pollination by covering with paper bags in 1907 gave a few good seeds, showing that at least some seed would set by self-fertilization. Since that time each season a considerable number of the selected plants have been protected from cross-pollination by covering the entire plant with small cloth tents or by covering certain heads with paper bags. In this way self-fertilization or inbred seed has been obtained from a large number of select types for testing.

The test of any particular chosen plant is conducted in the following way:

1. The selected plant is propagated vegetatively by digging up and separating the bulbs which are formed in the stooling of the plant. These are taken in early September and a row of from 16 to 24 plants grown. These plants, it will be understood, are simply transplanted parts of the same individual. From such propagation the character of the individual can be judged better and a better idea can be obtained of the yielding capacity of the plant, as well as other characters.

2. Inbred seed is carefully grown in sterilized soil and the seedlings transplanted in rows in field plats as above described, to test the transmission of the characters for which the plants were selected.

3. As soon as sufficient seed can be obtained, plats are sowed broadcast in the usual way to test the yield under ordinary field conditions.

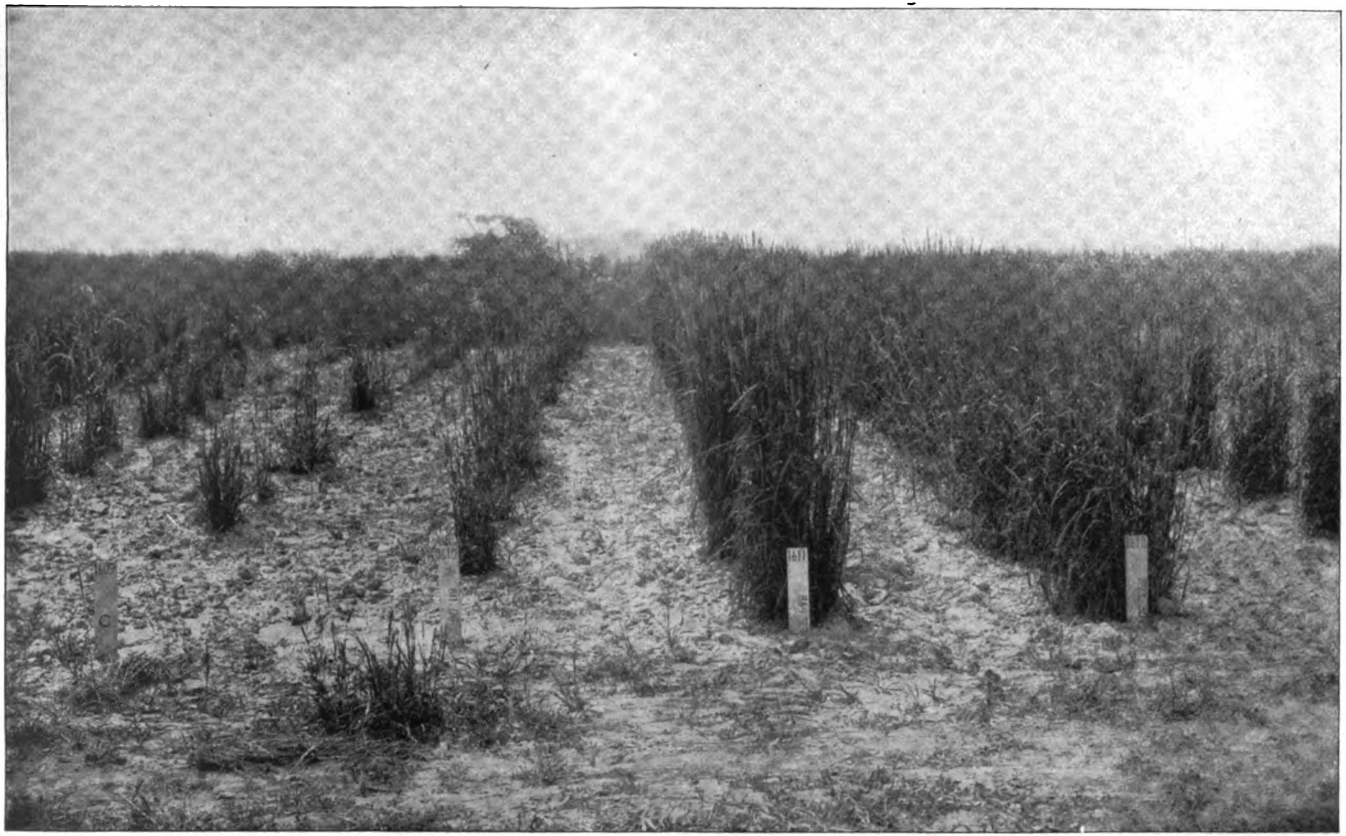

FIG. 67.— REPRODUCTION OF DIFFERENT TYPES OF TIMOTHY BY CLONAL PROPAGATION.
Each row represents a single individual, propagated by slips. Notice difference in size and type.

4. As soon as a variety is known or believed to be valuable, isolated plats are planted from inbred seed to obtain seed for planting larger areas, which will finally give sufficient quantities of seed for distribution.

A large number of types have now been tested more or less thoroughly by these methods, and very suggestive results obtained.

DO THE VARIATIONS TRANSMIT THEIR QUALITIES?

In 1907 over 200 different types were propagated in rows by taking the bulbs and growing them as clonal[3] varieties. The examination of these rows when they were two, three and four years old, showed wonderful differences in type and clearly demonstrated that the differences first observed in the individual seedlings were by no means accidental. Dwarf plants remained dwarf in such rows, and giants remained giants. Heavy yielders and light yielders transmitted these qualities in wonderful degree. In the following table the records of the average yield per plant by clonal propagation in five light-yielding and five heavy-yielding rows, will give an indication of the differences between the various types in this one important character. (See Table I., column "Average yield per plant of mother by clonal propagation.")

In 1908 and 1909 test rows of plants from inbred seed of a considerable number of different types were planted, and in many cases by the side of these were grown rows from open-fertilized seed and from clons of the same original plant. These plats had reached sufficient size in 1910 and 1911 to allow careful study and judgment. The writer is now able to state definitely that a very large number of the variations selected have transmitted their characters in marked degree. Indeed, many of the types appear to be as uniform as any of the varieties of wheat and corn which we have in cultivation. It would appear that the plants originally selected must have been what the scientists call mutations or biotypes. Certain it is, they represent distinctly different types which transmit their characters. Here as in the tests of the selected individuals by clonal propagation, the character of light and heavy yield is strikingly transmitted. The record of the average yield per plant of five light-yielding and five heavy-yielding plants is given in Table I., and will indicate the transmission through seed of these characters. (See Table I., last column.[4])

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[3] A clon or clonal variety is one propagated vegetatively by cuttings, bulbs, or grafts, such as the varieties of strawberries, apples, and the like.

TESTS OF NEW VARIETIES OF TIMOTHY

The experiments described above have shown that when the plants are grown in rows, with all the space which they require for full development around them, they transmit their good qualities, such as yield, and are to be regarded as stable or fixed varieties. The grower will immediately inquire whether these qualities or differences in yield are shown when the different sorts are grown by broadcast sowing in the ordinary way, for of what value are they unless their good qualities are maintained under ordinary methods of cultivation?

To test the different sorts under ordinary conditions, open-fertilized seed, thus probably somewhat mixed, was sowed in test plats in comparison with similar check plats of ordinary timothy.

TABLE I.

SHOWING TRANSMISSION OF YIELD IN TIMOTHY BY CLONAL AND SEED PROPAGATION

Number of original plant	Plat number	Average yield per plant of mother by clonal propagation	Plat number	Average yield per plant of progeny by seed propagation
		LIGHT-YIELDING PLANTS		
9.02	1786	2.672 oz.	3104	1.666 oz.
12.07	1797	0.768 oz.	3216	1.875 oz.
17.25	1728	1.744 oz.	3167	1.411 oz.
128.19	1799	2.672 oz.	3217	0.857 oz.
211.31	1792	2.464 oz.	3211	1.333 oz.

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[4] These records are from imbred seed of the same original mother plants, the average yield of which by clonal propagation is given in a preceding column.

TABLE I.— (*Continued*)
HEAVY-YIELDING PLANTS

9.03	1611	15.520 oz.	1916	10.533 oz.
37.31	1630	19.680 oz.	1909	9.714 oz.
147.41	1620	15.008 oz.	1906	10.000 oz.
269.41	1743	16.592 oz.	1931	9.428 oz.
278.40	1752	15.904 oz.	1942	9.500 oz.

The open-fertilized seed of the 17 new sorts was taken from rows of these varieties propagated from bulbs and, while not isolated, were very much less subject to crossing than where one plant of a type stands alone in a mixed field. The later experience with the plats grown from this seed has shown that there was little crossing, as the plats of the different sorts clearly show their different characters, such as lateness and earliness, color and form of head, and the like.

The seed used for the check plats in these experiments was purchased from a local seedsman and was the best timothy seed which he supplied to his trade. The plats were one rod wide and four rods long, thus one-fortieth of an acre, and every fourth plat was used as a check and planted with the ordinary timothy seed. These plats were sowed in the fall of 1909 and gave good test yields in 1910 and 1911.

The following table shows the actual yields per acre of field-dried hay obtained from each plant in 1910 and 1911.

TABLE II.

SHOWING YIELDS OF 17 NEW VARIETIES OF TIMOTHY IN COMPARISON WITH ORDINARY TIMOTHY [5]

		Yields in pounds, 1910			Yields in pounds, 1911		
Plat number	Parent number	Yield per acre	Check yield per acre estimated	Gain in yield	Yield per acre	Check yield per acre estimated	Gain in yield
C 1831	Check	5280	5280		5400	5400	
1832	1606	6720	5410	1310	6880	5050	1830
1833	1611	7000	5540	1460	7760	4700	3060
1834	1620	6680	5670	1010	7040	4350	2690
C 1835	Check	5800	5800		4000	4000	
1836	1627	7680	6000	1680	8320	3990	4330
1837	1629	8320	6200	2120	8080	3980	4100
1838	1630	7600	6400	1200	7320	3970	3350
C 1839	Check	6600	6600		3960	3960	
1840	1653	7440	6790	650	7680	4050	3630
1841	1668	6040	6980	940	7160	4140	3020
1842	1671	7640	7170	470	7240	4230	3010
C 1843	Check	7360	7360		4320	4320	
1844	1676	8200	7260	940	8280	4140	4140
1845	1684	7280	7160	120	6920	3960	2960
1846	1687	7600	7060	540	6080	3780	2300
C 1847	Check	6960	6960		3600	3600	
1848	1715	8000	7120	880	8040	3560	4480
1849	1722	7240	7280	40	6280	3520	2760
1850	1743	7520	7440	80	5880	3480	2400
C 1851	Check	7600	7600		3440	3440	
1852	1745	Road put	through	this plat		3560	
1853	1748	6520	7440	920	5280	3680	1600
1854	1777	9200	7280	1920	7360	3800	3560
C 1855	Check	Out			3920	3920	

	1910	1911
Average yield, 17 new sorts	7451 lbs. per acre	7153 lbs. per acre
Average yield, checks	6600 lbs. per acre	4091 lbs. per acre
Actual average increase	851 lbs. per acre	3062 lbs. per acre

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[5] In the above table the column headed "Check yield per acre estimated" may need explanation. The comparison of two plats grown side by side may not be fair, as the land changes somewhat; even in one rod. We desire to get as nearly as possible an estimated check yield for each plat of what the check seed would have given if sowed in that plat. Taking a specific illustration, in 1910 Check Plat 1831 yielded 5,280 pounds per acre, and the next Check Plat, 1835, gave 5,800 pounds per acre. Evidently for this season the land is getting better, as we proceed toward the second Check Plat, 1835. The difference between the two checks is 520 pounds. In every four plats there is one check and one-fourth of 520 pounds is 130 pounds. Now, if we add 130 to the yield of Plat 1831, we get the estimated check yield for Plat 1832, which is 5,410 pounds. Adding 130 pounds to this gives us 5,540, the estimated check for Plat 1833. This will probably make the method clear. The correction number between each two checks will obviously be a different number in most cases.

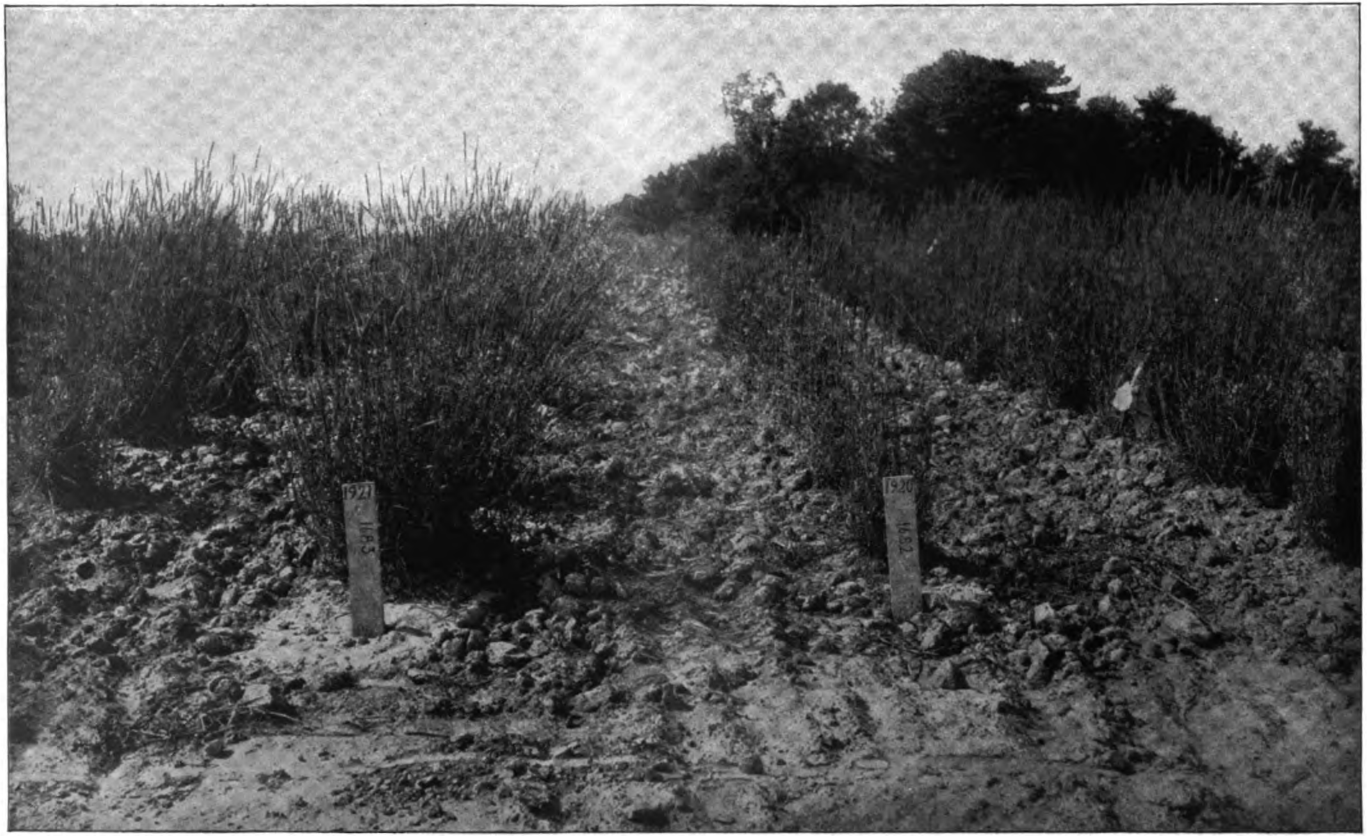


FIG. 68.— TRANSMISSION OF LARGE AND SMALL TYPE BY SEED PROPAGATION.
Row on right (1920), a dwarf type. Row on left (1921), a comparatively large type.

From a study of the above table it will be seen that in 1910, two of the new sorts, 1841 and 1853, produced less than the yields of their estimated checks, but that in the other cases the yields were much in advance of the checks. In this year all of the 17 new sorts gave an average yield of 7,451 pounds per acre; while all of the check plats gave an average yield of 6,600 pounds per acre. The new varieties, even including the two low yielders, gave an average increase of 851 pounds per acre.

In 1911, which was in general a less favorable season for timothy, all of the new sorts showed substantial gains over the checks. In this year the average yield of all of the 17 sorts was 7,153 pounds per acre, while the check plats gave an average yield of only 4,091 pounds per acre. The new varieties in this year thus gave an average increase per acre of 3,062 pounds, or over one and one-half tons per acre. The reason for the decrease in the check plats in the second season is clear to one who has followed this work. Ordinary timothy rusts badly and owing to lack of vigor is comparatively short-lived. A large part of the decrease is due to these causes, but it is also in some measure due to the poorer season. On the other hand, the new varieties are selected for vigor, rust resistance and ability to stool, and they would naturally increase in size for three or four years and would gradually cover the ground more thickly. These varieties were clearly cut down by the poor season or they would have given a better yield the second year than the first. Throughout this experiment, which was made as uniform for every plat as possible, the new varieties have clearly shown their superiority in greater height and thicker development on the ground. It may be stated furthermore, that several hay dealers who have visited the plats have stated without reservation that the quality of hay produced by the new sorts, owing to the retention of a fresh green quality and leafiness, would be much superior to that on the check plats of ordinary timothy.

WHAT DO THESE NEW VARIETIES MEAN?

It may seem surprising to those unfamiliar with breeding that such striking results can be obtained in so short a time. It is truly rather remarkable, but is in no sense a greater increase than would be expected under the conditions. When we remember that timothy is one of the most general crops grown in the civilized countries of the world, and that it has been cultivated for about two centuries under very widely differing conditions of soil and climate, we can see that every opportunity possible has been furnished for the stimulation of variations. We now know that a variation once produced is rarely lost in nature, but usually is added to the total character variations of the species. Through many years and over millions and millions of acres, among countless billions of plants, these variations have been accumulating with no attempts to isolate them and use the best for the foundation of improved races for cultivation. Is it any wonder then, that with this accumulation of material by selecting the best variations we get races that yield nearly double that obtained from the mixture of all sorts of types? Suppose, for comparison, apples had not been bred for the last two centuries and we had a forty-acre orchard planted with all sorts of variations taken at random, including the worthless wild types and all other sorts, such as would have been produced in this period of cultivation without selection. What would be the comparison of value between the crop of such an orchard and the crop from a similar forty-acre orchard planted with Northern Spy or any one of five hundred of our good modern varieties? The crop from the unselected varieties would in large measure be wholly unsalable in our modern markets. Probably not more than one-sixth of the crop could be sold for any purpose, and it is doubtful whether even one one-hundredth of the crop could be compared with our modern sorts. If we compare the results obtained in timothy, therefore, with a similar illustration in apples, we can readily see that the timothy results as obtained in the experiments described above are no greater, if as great, as we might expect. Indeed, the writer feels that only a beginning has been made up to the present time.

Hay is one of the largest agricultural crops of the United States, outranking all other crops, except corn, in total value of production. In 1910 according to the statements issued by the United States Department of Agriculture, there were grown in the United States 45,691,000 acres of hay which yielded a crop having a farm valuation of $747,769,000. No statistics are available from which we can determine what proportion of this hay

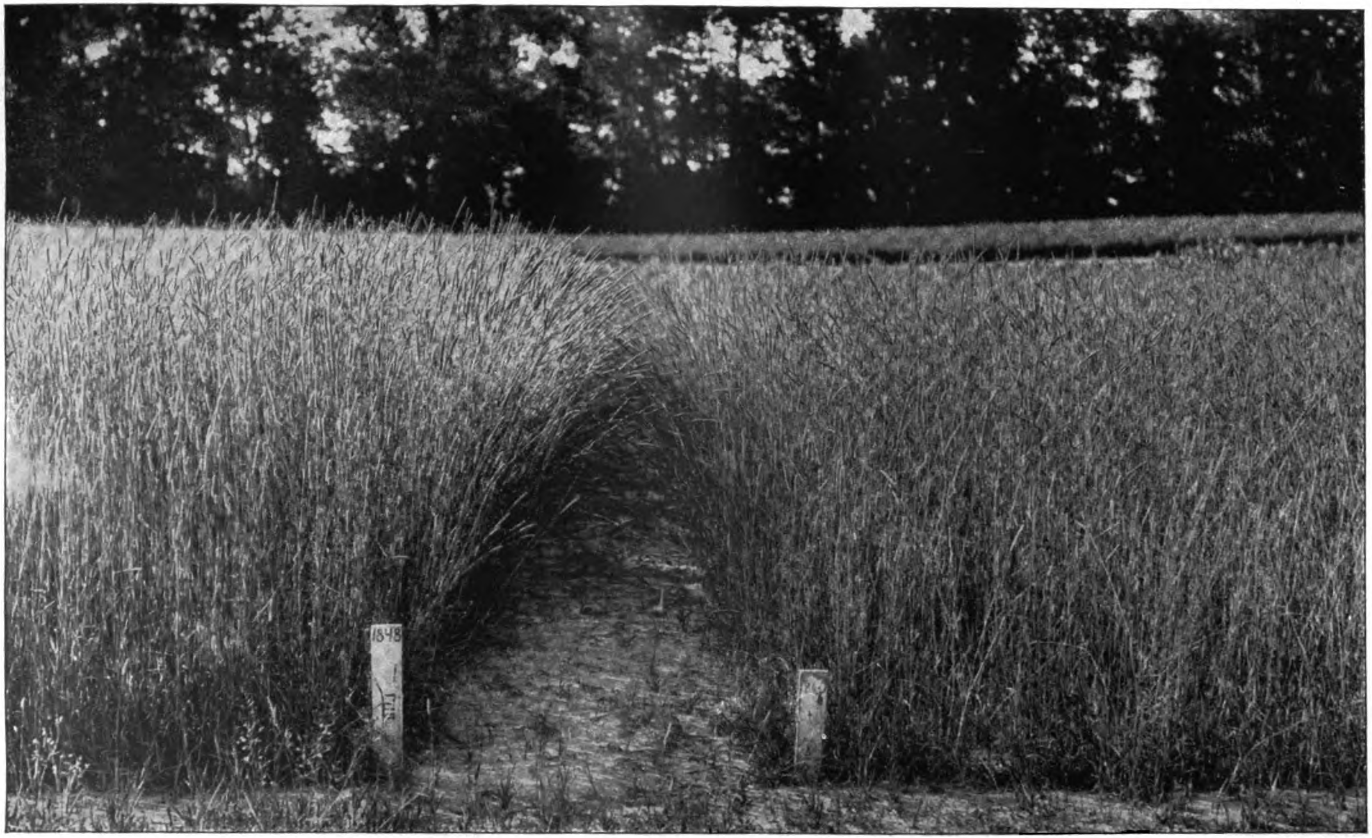


FIG. 69.— PLAT ON LEFT, NEW VARIETY; PLAT ON RIGHT, FROM GOOD SEED OF ORDINARY TIMOTHY. Notice comparative height and density.

was timothy, but the writer believes that we may safely conclude that at least two-thirds of the entire hay crop of the country is timothy. If this is true, the timothy crop of the United States in 1910 had a valuation of over $498,000,000. In the two years during which tests have been made, the 17 new sorts gave an average increased yield of slightly over 36⅗ per cent. above ordinary timothy. A 36⅗ per cent. increase in the valuation of the timothy crop as above estimated would give us over $182,000,000 as the estimated annual gain in the value of the crop which would be obtained if these new sorts could be used throughout the country.

Such figures, it must be remembered, are simply estimates and mean but very little other than to give us quickly a comprehension of what such experiments under ideal conditions might mean to the country. The writer would state very emphatically, however, that he believes it would be entirely possible to increase the yield of the crop to this extent if it were possible to have every field of timothy in the United States sown with the one of these new varieties best adapted to the conditions. In New York, which is the largest hay producing state in the Union, and where these varieties have been developed, their introduction into cultivation should result in a marked increase in the average yield.

WHEN CAN SEED OF THE NEW SORTS BE OBTAINED?

For the next two years it is probable that every seed of the new varieties available will be grown to increase the supply. Every effort will be made to get these varieties into the hands of growers at the earliest possible date. While timothy increases very rapidly, a considerable period must necessarily intervene before the seed will be available in large quantities. The writer would request that growers do not write for seed at the present time as it cannot be supplied.

WHEN SHOULD TIMOTHY HAY BE CUT?

A considerable part of the value of the hay crop depends upon the season at which it is cut. In the eastern and New England states, the farmers aim to cut their hay usually soon after the plants are in bloom, but considerable of the crop is cut at a much later period. In the central or corn-belt states the cutting is usually done at a later period. At present there is little exact knowledge available from which a rational practice can be established, and the farmers' practice in general is based on no very definite knowledge. We need to know definitely at what period of cutting the largest yields per acre of dried hay can be obtained, which will at the same time give us the largest yield per acre of nutrients of the highest digestible ratio.

There has recently appeared a paper by President H. J. Waters of the Kansas Agricultural College, entitled "The Influence of Maturity Upon the Value of Timothy Hay," which is of great value to hay growers, and the results should be generally known. The following is a review of President Waters' experiments and results:

Cuttings of hay were taken at five periods of development.

"First cutting: When the plants were just in full head, on the average about June 12.

Second cutting: When the plants were in full bloom, about June 20.

Third cutting: When the seeds were formed, or when the bloom had all been shed, usually about July 1.

Fourth cutting: When the seeds were in the dough, about July 8.

Fifth cutting: When the seeds were ripe but not shattered, about July 16."

The experiments with timothy cut at these five different periods were carried on for five years and the results should thus be reliable.

The most suggestive and important point to consider first is the yield per acre of dry matter. The results are shown in the following table:

TABLE III.

YIELD OF DRY MATTER PER ACRE — ACTUAL AND RELATIVE — AVERAGE OF ALL TRIALS

Stage of development	Yield of dry matter per acre Pounds	Relative yield
First cutting, coming into blossom	3,411	83.41
Second cutting, full bloom	3,964	96.93
Third cutting, seed formed	4,089	100.00
Fourth cutting, seed in dough	4,038	98.75
Fifth cutting, seed ripe	3,747	91.63

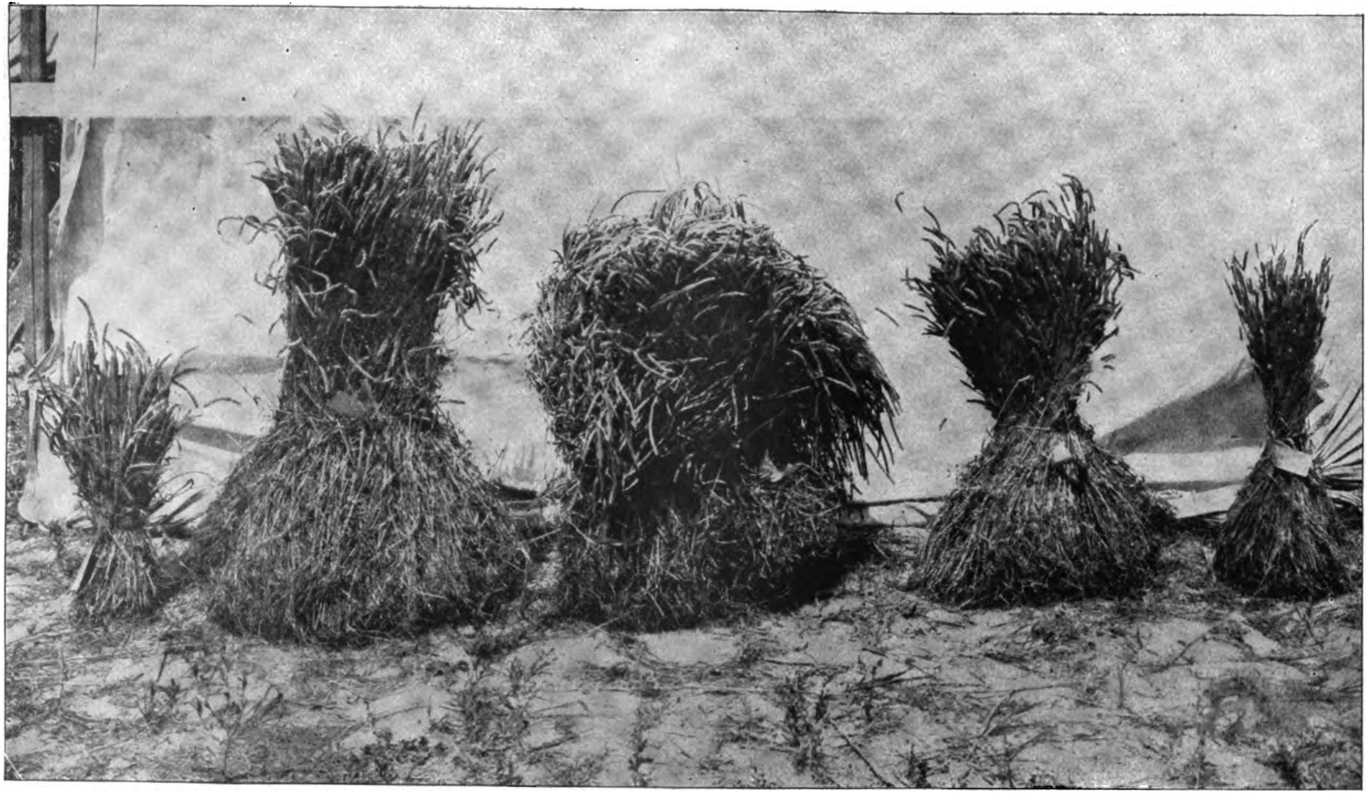


Fig. 70.— Bundles of Timothy Cut From Rows of Different Types and Showing Comparative Yields.

It will be seen that the third cutting, when the seeds were just formed and the bloom had all been shed, gave the largest yield of dry matter per acre. The reader will be interested in knowing that this cutting also gave the largest yield of field-cured hay per acre. The relative yield of field-cured hay per acre in each case followed the same order as the yield of dry matter per acre.

The next most important factor in determining the value of the different cuttings is shown by the relative yields of nutrients per acre. These are given in Table IV.

It will be seen from this table that the protein, ether extract (oils and fat) and crude ash were obtained in highest per cent. in the second cutting, while the nitrogen-free extract and crude fiber reached their greatest quantity per acre in the fourth and third cuttings, respectively.

To give us a still more rational view of the value of the hay at different periods, we still need to know the yield of the digestible nutrients per acre, which is shown in Table V.

It will be seen from this table that the timothy hay had reached its maximum of digestible dry matter, protein, nitrogen-free extract, crude fiber and ash at the time of the second cutting, while the maximum yield of digestible ether extract or fat was not reached until the fourth cutting. Clearly, however, so far as the total nutrient materials are concerned, the plants had reached their maximum yield per acre at the time of the second cutting.

President Waters also tested the palatability of the hay as affected by time of cutting, using cattle and to some extent sheep. Cattle having no other food than timothy hay, clearly selected the hay in the order in which it was cut, preferring the first cutting. When fed liberally on grain and silage during the test, they did not show such decided preference for the early cuttings. Fat wethers given all the corn they would eat showed no apparent preference between the different cuttings. The experiments demonstrated that in general the early cuttings were the most palatable.

President Waters has given us definite data showing that the largest yield per acre of digestible nutrient materials is obtained by cutting timothy when in full bloom, and that the largest yield per acre of field-cured hay, as well as actual dry matter,

TABLE IV.

AVERAGE YIELD OF NUTRIENTS PER ACRE — ACTUAL AND RELATIVE

Stage of development			Protein		Nitrogen-free extract		Crude fibre		Ether extract		Crude ash	
			Actual yield per acre	Relative yield per acre	Actual yield per acre	Relative yield per acre	Actual yield per acre	Relative yield per acre	Actual yield per acre	Relative yield per acre	Actual yield per acre	Relative yield per acre
			Lbs.		*Lbs.*		*Lbs.*		*Lbs.*		*Lbs.*	
1st	Cutting	Coming into blossom	260.9	89.2	1634.5	80.4	1181.0	79.8	112.1	91.3	221.8	86.1
2nd	Cutting	Full bloom	292.6	100.0	1952.6	96.1	1337.9	90.4	122.9	100.0	257.7	100.0
3rd	Cutting	Seed formed	271.1	93.0	1983.9	97.6	1479.4	100.0	111.0	90.3	237.9	92.3
4th	Cutting	Seed in dough	252.8	86.4	2032.9	100.0	1428.9	96.6	110.1	90.1	212.1	82.3
5th	Cutting	Seed ripe	218.6	74.7	1876.9	92.3	1342.8	90.8	87.2	70.9	221.4	85.9

Quoted from President Waters' Table III.

TABLE V.

YIELD OF DIGESTIBLE NUTRIENTS PER ACRE — ACTUAL AND RELATIVE
AVERAGE OF ALL TRIALS

Stage of development			Dry matter		Protein		Nitrogen-free extract		Crude fibre		Ether extract		Ash	
			Pounds per acre	Relative yield	Pounds per acre	Relative yield	Pounds per acre	Relative yield	Pounds per acre	Relative yield	Pounds per acre	Relative yield	Pounds per acre	Relative yield
1st	Cutting	Coming into blossom	1995.6	92.5	134.6	91.7	899.3	82.8	777.0	99.4	42.7	79.0	77.1	92.9
2nd	Cutting	Full bloom	2156.3	100.0	146.9	100.0	1085.6	100.0	781.4	100.0	44.2	81.8	83.0	100.0
3rd	Cutting	Seed formed	2038.8	94.5	113.3	77.1	1040.5	95.8	761.7	97.5	50.9	94.1	69.8	84.1
4th	Cutting	Seed in dough	1913.7	88.7	98.0	66.7	995.5	91.7	699.9	89.6	54.1	100.0	67.4	81.2
5th	Cutting	Seed ripe	1774.8	82.3	91.9	62.6	892.6	82.2	683.1	87.4	37.5	69.4	63.0	75.9

Quoted from President Waters' Table V.

is obtained from cuttings made when the seeds were just formed, an early "milk" stage immediately after the bloom had all fallen. In each of these stages a larger yield per acre was obtained, both from the standpoint of gross weight of material and actual nutrients, than was obtained from earlier or later cuttings, and while apparently not quite so palatable as when cut at a still earlier period, it would seem in general that we may conclude that the proper time to cut timothy is between the time of full bloom and the period when the blooming has just passed and the seeds are in an early stage of development, the second and third cuttings in President Waters' experiments.

Many other factors which cannot be discussed at this time may enter into the problem of determining the time of harvest, but the above factors are those which in general are likely to be the least understood by practical men.

POTATO DISEASES

By Donald Reddick

Professor of Plant Pathology, Cornell University

EUROPEAN DISEASES

Importation. Before taking up the diseases which are a constant menace to potato production, I wish to speak briefly in regard to a European disease which is likely to be imported into our country and become established in our potato fields. As you know, the potato shortage in the United States has resulted in the importation of millions of bushels of foreign-grown tubers. These potatoes are coming from Ireland, Scotland, England and Germany. There are a number of potato diseases in Europe which are not known to occur in this country; the most serious, perhaps, being the potato wart disease. The potato is first attacked at the eyes; it becomes rough, and eventually the entire tuber is reduced to a scabby or warty mass. The disease is caused by a fungus which is carried through the winter on the tubers, and there seems no question but that potatoes attacked by it will be introduced in the importations which are now coming in.

Save home-grown seed. On account of the present high price of potatoes, a great many growers are selling out very close; indeed, many are apt to find themselves without enough seed when spring comes. It has been pretty well established that one cannot hope to obtain a satisfactory yield of potatoes from imported stock, certainly not the first year; but wholly aside from this consideration, I wish to impress most emphatically upon you the great danger you run from planting seed of unknown origin. We know that large shipments of imported potatoes have gone west as far as Chicago, and it is not unlikely that many of these potatoes will reach stations far from the main-traveled roads. If you should find in your planting this spring that you will need to fill out a last half acre or a last dozen rows, it would be better to let the ground lie fallow all summer rather than buy seed that you are not sure is home grown and thus run the risk of introducing into your fields this dreaded disease. Those of you here probably would not consider such a proposition, but I presume every one of you know of men in your own neighborhood who would not hesitate to use such tubers for seed and who commonly use the half rotted culls from the sorting station for planting.

THE POTATO BLIGHT AND ROT

Symptoms. Of all the diseases to which the potato is heir, perhaps no one has taken a greater toll than the blight. All of you have doubtless seen a field go down almost over night with the blight, and certainly if you have seen it you have also smelled it. You are probably all more or less familiar with this disease, so that I shall take up with you only a brief discussion of its cause.

Cause. The blight is caused by a fungous parasite (*Phytophora infestans*). This fungus winters in the tuber where it produces a slight rotting. The soft rot of the potato is often started by the blight and finished by one of a number of bacteria. If the fungus has not made much inroad in the tissue, its presence can be detected by a faint pinkish discoloration which is indicative of the vegetative stage of the fungus. This can be easily verified by a microscopic examination.

Life history. If a tuber showing this pinkish discoloration is sliced and placed in a moist dish under a tumbler, it will be seen in a few days that the fungus has grown to the surface and appears there as a whitish mass. From the tips of many of the threads, of which the growth is composed, globose bodies are developed, each of which, in the due course of time, gives rise to from six to ten swimming swarm spores which can readily be observed, but of course the microscope is necessary to enable one to see them. Exactly the same thing takes place with the cut tubers that are placed in the warm, moist soil. The actual development of the spores may be delayed until there have been several warm rains, and usually the plants have attained some size and may have been cultivated several times. When the right condition is obtained, the swimming spore passes through the soil water, works its way to the surface and lodges itself on one of the leaves which may have been beaten down to the soil by a driving rain or covered during the course of cultivation. Once on the leaf, a blight of the leaf follows, and in a few more days the fungus will have grown sufficiently into the tissue of the potato leaf to be able to produce a new crop of spores. The globose bodies of which I have spoken are again formed on the tips of tiny, thread-like projections which grow out from the underside of the leaf. They are easily broken off and may be carried great distances by the wind and many of them lodge on the foliage of other potato plants. When sufficient moisture is furnished, these globose bodies give rise to the swarm spores. The ideal conditions for the formation of these spores is a prolonged, gentle rain with continuous fog for twenty-four or thirty-six hours. Many infections are thus produced, and in a few days leaves in every part of the potato field will show the blighted condition. This becomes more apparent from day to day as a greater portion of the leaf is infected, and in the course of ten days the whole field may blight down.

Late attacks. Now the fact that we have not had much blight during the past three or four years is, I believe, largely due to the fact that the summers have been unusually dry, with practically no prolonged rainy periods. In some localities, though, rains have come in time to bring a late attack of the blight, which coming so late in the season has usually been mistaken for the natural dying of the vines. Spores have been produced, and in some cases these have fallen on the ground and been washed to new tubers in the soil. Infection of these tubers occurs, and in certain years we have had a considerable amount of rot in spite of the fact that there was apparently very little blight.

Control. I think you will see from what I have just said that there are at least two ways which may be used to fight the blight. The first consists in throwing out all infected tubers at cutting time. Of course the difficulty in this connection is that the most dangerous tubers are the ones that show very little indication of the presence of the fungus, and, even with the greatest care in sorting, one would never be able to throw out all that were infected. The second way is preventing the infection of new foliage. If substances can be sprayed on the foliage before the blight spores are produced, or rather before the blight appears and has an opportunity to affect the tissue (that is, before a rainy period), I think you will agree with me that we can head the fungus off in this way.

Bordeaux mixture. Such a substance is bordeaux mixture. This bordeaux mixture, as it is now commonly known, is prepared by mixing solutions of blue vitriol and milk of lime. There are many formulas for making this mixture, but the one most used is copper sulphate, five pounds; quicklime, five pounds; and water, fifty gallons. Arsenate of lead or paris green may be added to the mixture when it is desired for killing bugs. Bordeaux mixture is practically insoluble in rain water and will not wash off even in prolonged rains. The secret of fighting the blight at this stage lies in making the application of spray so that it will completely envelope all of the foliage of the plants. If we were able to predict absolutely just when the rains would occur, we could obtain complete control by making the application a day previous. This is not always possible, however, and we run the risk of having some new foliage before the next infection period. I think you will readily see that it would be unwise to spray immediately following a rainy period. Better give the plants an opportunity to make as much new foliage as they will as a result of the rainfall and then plan to spray this new foliage as shortly before the next general rain period as possible. You will find the weather maps which are published in many of the daily papers a great advantage in predicting when the rain periods are apt to occur.

Machinery. You will note that I have just said, "the complete envelopment of the potato plants." In order to arrive at this Utopian condition it is very necessary that the machinery for potato spraying be in the very best condition. It is usually not possible to make a satisfactory spray for potatoes at a pressure less than 100 pounds. No spraying machine should be without a pressure gauge. Half-hearted spraying is usually of little value and only serves to lessen one's faith in the value of spraying. In addition to high pressure, a good mist-producing nozzle must be used. There are a number of such nozzles on the market, many of which will give a satisfactory spray at 100 pounds pressure. Some nozzles are of little value at less than 150 pounds pressure. When the plants are still standing upright and have not spread out over the ground to any extent, it will be sufficient to spray with a single nozzle to the row, but when they have spread out over the rows, several should be used, at least two, and some people use three under those conditions.

Returns. The only other point to which I wish to call your attention in this connection is the fact that F. C. Stewart, of the Geneva Agricultural Experiment Station, has shown conclusively by his experiments with potato growers that, even though there is no blight, one may expect an increase in yield from spraying with bordeaux, which will much more than offset the cost of time and labor. In fact, some growers have obtained as much as one hundred bushels increase per acre by the use of bordeaux mixture, in a season when there was practically no blight. Under these circumstances, it seems to me that no one can afford not to spray.

Number of applications. I presume many of you want to ask how many times to spray. The answer to this question, of course, cannot be very definite since two seasons are rarely alike. One can never afford to spray less than three times, and many spray six and even eight times. The main thing is to get the new growth completely covered with the spray before the rains come.

POTATO SCAB

Symptoms and cause. All of you, no doubt, are more or less acquainted with the potato scab. Roughened circular patches from a quarter to a half inch in diameter are characteristic of the disease. Ordinarily there is no difficulty in distinguishing the true scab caused by *Oospora scabies* from the scabby spots or cankers produced by millipedes, insect larvae, etc. There seems to be some question among scientific men at the present time as to whether the causal organism of the scab should be classed with the fungi or bacteria. For practical purposes, however, this point is not of particular moment. The main thing to be borne in mind is that this organism is carried through the winter on the diseased tubers. The disease is one that does not enter deeply into the tissue of the tuber. This means that the causal organism is relatively near the surface and is readily reached by a dipping treatment. Since the fungus of the potato blight penetrates deeply into the tissue, it can not be reached at all in this way. We know further that the organism causing the potato scab is favored by the presence of lime in the soil and, further, that it spreads rapidly when manure is applied. This is perhaps one of the main reasons why potato growers do not like to apply manure to their potato land, but rather apply it to the crop immediately preceding and use chemical fertilizers for the potato crop. I call your attention to the influence of lime on the growth of the potato-scab organism, inasmuch as many of you are contemplating the extensive use of lime in your soil. This makes it all the more imperative that you employ some method to keep this disease in check.

Control. Several different methods of control have been devised at one time or another, but the one which meets with the greatest favor and which is most commonly used at the present time is the formalin dip. Formalin of the United States standard of purity may be obtained at almost any drug store. It is a thick, colorless liquid. One pint is added to a barrel containing 30 gallons of water. The uncut tubers in sacks are immersed in this solution for two hours, when they are removed and are then ready to cut. With a chain windlass, two barrels of solution and a third barrel for the drip, one man can easily keep two cutters going.

I should call attention at this point to the fact that Professor Morse, of the Maine Agricultural Experiment Station, has found it perfectly safe to treat the cut tubers with the formalin dip. This has proven very advantageous in that state on account of the fact that a bacterial disease (black leg) is prevalent there and can be held in check to a considerable extent in this way.

Gaseous treatment. The method of treating large quantities of tubers with a gaseous formalin treatment has been devised in Vermont. This treatment, however, requires a room which may be shut up tightly and probably is not worth the trouble when small lots of potatoes are to be treated. I shall be very glad, though, to furnish any one who desires it more specific directions for making this treatment.

Clean soil. Now that the tubers are treated, the process of obtaining clean potatoes is only half done. The scab organism of the seed potato has been killed by the treatment, but if the seed is placed in soil which has grown either scabby potatoes or scabby beets the year before, or if it is put in soil in which manure containing the parings of potatoes has been added, the time taken in treating the tubers has been wasted, as the organism will be introduced in the fields in this way. It is therefore necessary to use new land for potatoes, or land in rotation which has not been put to potatoes or beets within three years.

BLACK LEG

As is implied by the name, this disease is best recognized by the appearance of the stems of the potato plant. There is a characteristic blackening and shriveling of the main stalk near the surface of the ground. The disease is known to be present in certain sections of the state, but, so far as we are aware, it has not yet become destructive. As I have indicated above, the formalin treatment of cut tubers will prove of some value in holding this disease in check.

DISCUSSION

Question.— What do you consider the most destructive potato disease?

Answer.— Potato blight is the most destructive at present, but, as I have shown, this can be successfully controlled.

Question.— How long before a rain should a crop be sprayed?

Answer.— If the bordeaux mixture will dry on the foliage twenty minutes is long enough. I have often sprayed until the first raindrops began to fall.

Question.— Is potato scab carried in the manure?

Answer.— No. It is simply because the manure favors the growth of the scab fungus that it is thought by some to be carried in the manure.

Question.— What is the best method for getting rid of the scab?

Answer.— The best method is to use new land each year or, where a rotation of three or four years is being practiced, to treat the tubers before planting and be sure they are free from the fungus. The fungus dies out in the land in two or three years and it does not grow on other plants. If you plant a scabby tuber in clean land, you simply introduce the scab into your field.

THE CARE OF THE FARM WOODLOT

By John Bentley, Jr.
Assistant Professor of Forestry, Cornell University

It is not generally known that farm woodlots and forests constitute nearly two-fifths of the area of New York State. This figure seems large, especially when we remember that New York has the largest population of any state in the Union and that in many ways it leads the other states in industrial activities. The fact that there is such a large proportion of mountainous, hilly and rocky land, is the reason for there being so much forest and woodland, and of the total area of the state, at least one-seventh is covered by farm woodlots, which might very easily be made more productive. Let us consider for a moment the present condition of these woodlots and the causes for this condition.

In the first place, nearly all farm woodlots are cut over at more or less frequent intervals with no thought for the future growth. The very best kinds of trees are removed, and the poorer ones are allowed to occupy the spaces made vacant, to the exclusion of younger trees of better species. In a great many instances, cattle and horses are allowed to graze and find shelter in the woodlot, much damage to young growth resulting from this practice; and, while fires are probably not so troublesome as they are in the larger bodies of forest land, it is nevertheless true that they are responsible for the poor condition of a great many woodlots. The first step, therefore, in improving the condition of our woodlots as we find them to-day, is to protect them against fire, cattle and horses and the ravages of insects or tree diseases, and then by a careful method of cutting and making provision for the new growth, to see that the best species of trees have a chance to grow up and take the place of those which we have removed.

The farmer may improve the condition of his woodlot merely by careful cutting, an opportunity which is rarely presented to lumbermen or those interested purely in obtaining the most they can from the forest. By this I mean that the farmer has a large and varied use for timber and can use all kinds and all sizes to advantage. If he has some old, mature trees of good size and form, they can be cut and disposed of for lumber; if some of the middle-sized trees need to be taken out, in order to improve the condition of the woodlot, these can be used for fence posts; and all the crooked, defective and diseased trees can profitably be used for firewood, if for nothing else. So that, no matter what a farmer may find necessary to cut from his woodlot in order to improve its condition, he can always find a use for it, and that material is never lost.

I will give three general rules for cutting in the woodlot, which may be of assistance in improving its general condition.

First, cut only those trees which are mature and have reached their full growth.

Second, cut all defective, diseased and crooked trees which have no chance of making good, merchantable lumber, even if left.

Third, favor the good species, the well-formed trees, and always provide a chance for the seed of neighboring trees to fall to the ground under good conditions and germinate as soon after cutting as possible.

The last of these conditions is the hardest one to fulfill. As a general rule, the woodlot should not be opened up too much by heavy cutting, because the soil is likely to become dried out and unfit for the germination of the tree seeds, or else the additional light will permit the rank growth of weeds and grass, which will soon make it almost impossible for tree seeds to germinate. As a guide to how much cutting should be done in any one spot,. it might be said that a safe rule is to open up the woods so that at least a two-thirds shade is still present. By this it is to be understood that at noonday the sun shines directly on not more than one-third of the ground.

If you have been successful in starting a second growth of young trees in these openings, great care should be exercised to see that they are protected from damage and have every opportunity to develop into straight, thrifty trees. They should be allowed to grow rather closely crowded when young, because in this way the tendency is for them to grow straight up, with few side branches, thus forming a good straight, clean growth. A thinning or cutting should be made when it becomes very evident that the better individuals of the young stand need to be released from crowding by their neighbors. Such thinnings should always be moderate and performed at frequent intervals, rather than few and heavy.

Where the woodlot has been impoverished and made very unproductive by careless methods of cutting, and when there are no good species of trees left which can furnish seed for the new crop, it may be necessary to plant young trees of desirable kinds in order to get a good stand established. The distribution of young trees for planting by the Conservation Commission of New York State, at extremely reasonable prices, makes it possible for every farmer to improve the condition of his woodlot by the introduction of valuable species of trees. The Conservation Commission distributes these trees only upon written application, received before March first of each year; and should applications be received for more than the available stock, the number of trees requested will be pro rated according to the total number available.

A few points about the planting of trees may not be out of place here. During the time that the trees are out of the ground, being transported from the nursery to the planting ground, all of the so-called evergreen trees, including pines, spruces, firs and larches, are extremely sensitive to the drying effects of the air and sun. The roots of these species should be kept moist and protected from evaporation in order to insure their chances of living after planting. If the weather is unsuited to planting when the trees are received, they should be taken from the crates as soon as possible

FIG. 71.— The Woodlot May be a Valuable and Attractive Part of the Farm.

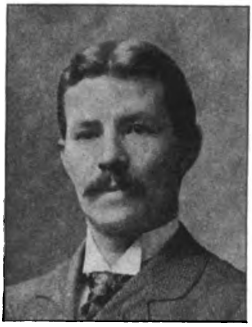
and " heeled in " until the weather conditions are favorable. Full instructions regarding the planting of trees are given in the bulletin entitled " Reforestation," which is issued by the Conservation Commission. Trees, as a rule, should be planted about six feet apart each way, making about 1,200 to the acre, and should receive the same care, attention and protection until well established that any other farm crop receives.

It is frequently asked whether tree planting pays. In answer to this question it may be said, that tree planting certainly does pay on land worth a small, or a moderate amount of money, and where the timber can be allowed to grow a sufficient length of time to become of good merchantable size. This, of course, requires from 30 to 60 years, according to species, and at first sight it might be said that this is too long a time to wait for returns. However, it should be remembered, that the improving of land otherwise unfit for any other agricultural crop by planting of trees which are certain to have a high value in the near future, can be regarded as a form of investment; and that, even should the land be sold before the trees become of merchantable size, that land will have a higher market value in the eyes of any prospective purchaser who understands the value of timber. The day is not far distant when the rising price of lumber will make all sorts of timber land more valuable, and, with more favorable laws governing the taxation of timber lands and more adequate protection from fire, the growing of timber will become an important part of the work of farmers in the next few years, because there is such a large proportion of land in this state which is unfit for any other crop.

BIRDS IN RELATION TO AGRICULTURE

By F. H. Hall

Editor and Librarian, New York State Agricultural Experiment Station



Without the birds, country life would indeed be barren to any lover of animate activity. No longer do deer, bears, wolves, wild cats or beavers send thrills of interest, anger or fear into the hearts of New York farmers or farmers' boys. Fox, 'coon, mink, fisher, otter and weasel have been exterminated or have become so rare that the advent of any one of them in field or henyard is the surprise of a decade. The larger squirrels, even, have been driven from the smaller woodlots to the tree-clad hillsides or the large forests. A few small squirrels and chipmunks, the much maligned but useful skunks, "Molly Cottontails," a stupid woodchuck or so on some sandy hillside, the ever-present and annoying, but usually invisible, rats and mice, bats and shrews, beneficial but much abused, the muskrats in the ponds and the moles in their hidden pathways, are all that are now left us of the teeming mammal life that supported the Indian and made the days of farmers, a few generations ago, an alternation of conflict with animal enemies and enjoyment of their presence and activities.

Birds still remain. Not all of them; for the passenger pigeon has utterly disappeared — that "wild pigeon" once flying in flocks that hid the sun and nesting in roosts so crowded that large trees broke beneath their burden of birds and nests. The wild turkey no longer struts and gobbles in forest and glade. The wood-duck has nearly vanished — the most beautiful of American water-fowl, which the farmer of New York State might hope occasionally to find nesting in his water-side woodlot. Neither can the country lad, in search of some new thrill, count any longer on finding common along the wet edges of the wood the deep-bored tubes of the woodcock; nor hunter, desirous of that best test of the quickness of his aim, flush regularly this erratic flier in his familiar haunts. Bob-whites, in most parts of the state, now no more sound their pretty call; and the larger ruffed grouse, or "patridge" of the farm boy, while still to be found in small numbers, is confined mostly to the wooded hillsides. In these two birds the farmer loses valuable allies in his conflict with grasshoppers, crickets and similar meadow, pasture and grain-field pests; but in many parts of the state the pheasant is replacing the partridge, perhaps to the farmer's disadvantage since he pulls some corn, but much more likely to his benefit as the pheasant is more a bird of the open fields than the ruffed grouse, and is said to be fond of potato beetles, a useful trait missing in the older native bird.

Yes! Thankfully we say it, birds still remain. In spite of the prowling house cat and her marauding semi-wild relatives of roadside and woodland, with their insatiable appetite for small birds; in spite of the market hunter and the foreigner out with his shotgun on Sunday, with his idea of unlimited license in this "Land of Liberty;" in spite of the lady — pardon the name — in spite of the lady of fashion who, to add a few bright feathers to her hat, does not hesitate even at the horrible barbarities of aigrette hunters — the agonized deaths of mother herons and the pitiful starvation of nestlings caused by this unhallowed pursuit; in spite of crows, red squirrels and small boys, each with a passion for egg collecting; in spite of all these and many other destructive agencies, Mother Nature has still preserved for us representatives of most of our bird species; so that with each returning spring we can enjoy the bubbling trills of the sparrow, brown thrasher and bobolink, the "cheerily" call of the bluebird, the boisterous song of the robin, the chatter of the blackbird, the drumming of the flicker and the startling courting screams of the hawks. We can still see the stately geese following the ice-line to the North, can catch the sun reflected from the meadow-lark's breast, can delight the eye with the brilliance of the tanager and the bright contrasts in plumage of oriole and red-breasted grosbeak; and those of us who happen to be sufficiently alert can riot in the striking color combinations of the warblers who give us the treat for a little time in May and then take to

Canada and the cold North the suggestions of tropical coloring they bear.

Through the summer our familiar friends remain, practically unchanged in kind, if reduced in number, from the times of Audubon and Wilson, adding incalculably to nature's charms for those who delight in graceful activity. And even when winter holds us in an icy grasp, many birds may be found in the forests, sheltering pine trees or hedges about the farms, and even in our door-yards. The downy and hairy woodpeckers still continue their faithful search for grubs and borers in the trees, the nuthatch joins them in a topsyturvy scramble round the trunks, the brown-creeper works in steadily ascending spirals up the shaggy stems, searching beneath each flake of bark for some hidden bug or beetle that only his curved beak could dislodge, possibly a few kinglets may add to the company their tiny bodies, each with a crown of gold, while the sociable little chickadee with his cap of black is sure to greet the human visitor with a friendly glance and merry greeting. In the fields the juncos may remain, with their representation of a typical winter day, leaden sky above and snow-clad ground beneath, and the tree sparrows will surely be somewhere about, busy at their helpful task of weed-seed destruction. Frequently, but not regularly, the snowflakes and long-spurs aid the tree sparrows in this most useful work, coming in such flocks that they may do in an hour what the sparrows would be busy over for a week. Owls do not leave us with winter, but they are so shy that one not familiar with their haunts is most pleasantly surprised if some "great barred" shadow or his "snowy" brother from the North flits noiselessly across the path. The melancholy call of these birds of Minerva is one of the features of late winter and early spring, pleasant or the reverse, according to the hearer's idea of these mysterious forest friends of ours. A few song sparrows may also stay with us and an occasional robin; while within sight of water open in winter we may see as many kinds of water-fowl as of land birds.

Thus the birds add a gladsome touch to country scenes at all times of the year, delighting both eye and ear; and for this alone they deserve all the protection and encouragement we can give them; for, with but exceedingly few exceptions, they do little harm and gain their living from products man could never use.

But I wish to present to those who dwell in the country and make agriculture their life work a stronger appeal — a plea for the maintenance of bird life, supported by facts and figures that prove them an economic asset of every farm. In giving these facts I shall draw but little upon my own observation or study; for every bird-lover is apt to be prejudiced and see only good in the feathered world; while many dwellers on farms, especially if they raise fruit on which robins and catbirds sometimes levy heavy toll, or if they are poultrymen and unwillingly give (or think they give) the hawks and owls a few prize chickens, are liable to think birds a nuisance. I shall present testimony — only the smallest fraction of what might be offered — from those who have made bird study a business, and who have sought to collect and weigh the evidence on both sides. For the bird question, even to-day, undoubtedly has two sides. So complex are the relations of nature's forces and creatures, that it is extremely difficult to fix the limit of good or ill from any single source; and the difficulty becomes still greater when we join man's complicated interests to the conflicts already existent in the relations of plants, animals, birds and insects.

Birds serve as regulators of insect activity. It is doubtful whether they could ever control, alone, an outbreak of some insect injurious to crops when other conditions are right for the rapid, unchecked development of that pest; and many of the insect pests notably injurious on the farm, like potato-beetle and squash bug, have few bird enemies. Some have even said that it is doubtful whether the total extermination of birds would make much difference in the numbers of insect pests from which we suffer. These anti-bird theorists have undoubtedly been misled by the failure of small numbers of birds to cope suddenly with the surprisingly rapid increase of some insect pest; while they have overlooked the real work of the birds, which is, by constant, steady warfare upon all classes of insects, to keep the number of such overwhelming outbreaks to a minimum. Entomologists well know that there are hundreds of species of insects, now restricted in numbers or finding food upon some plant of no economic importance, which might, if unrestricted in increase, find the wild food plant utterly insufficient for the increased numbers of the insects and become devastating pests of farm crops. The birds and other agencies usually control such species, keeping them within safe limits. Occasionally conditions are just right and we have tent-caterpillar years or outbreaks of tussock moths; but the checks soon operate again, and the pest returns to its normal numbers.

Other students have said that were all birds destroyed, insects would increase so fast that in seven years they would consume every green plant on the face of the earth. This is an exaggeration just as great in the opposite direction; for with the increase of the insects, repressive agencies, other than birds, like parasitic insects and diseases, would find developmental conditions favorable and prevent such rapid increase.

But birds *do* make every effort to control insect or animal outbreaks; of course, not consciously as friends of man, but merely because they thus find food more easily and abundantly.

During an invasion of an Illinois apple orchard by canker-worms, Professor S. A. Forbes made a study of the stomach contents of many birds working in the orchard and found that practically all were increasing their bill of fare by canker-worms, most of them without neglecting their diet of other injurious species. The canker-worms served as dessert after the principal meal on other species, or the reverse. Twenty per cent. of the food of robins was canker-worms, 28 per cent. cutworms and 14 per cent. vine chafers; of catbirds, 15 per cent. of the food was canker-worms, 10 per cent. cutworms and other caterpillars, 14 per cent. ants and 33 per cent. vine chafers. Bluebirds took 36 per cent. of vine chafers and 12 per cent. of canker-worms; chickadees ate only canker-worms and beetles; house wrens made half their diet of the canker-worms. Warblers took from half to three-quarters of their food from the same source; while seven cedar waxwings (cherry birds!) had made practically all their meal upon the canker-worms. From 70 to 100 worms were found in each of these seven stomachs, so that, even if this was the food of the bird for the whole day, not a fair supposition as later facts will show, the 30 waxwings in the flock from which the seven were shot were destroying 3,000 worms a day, or 90,000 during the month of exposure of the canker-worm.

Passing down through the list of birds shot, canker-worms were found in the stomachs of sparrows, orioles, kingbirds, flycatchers, cuckoos and woodpeckers, and the percentage of injurious insects in the food ranged from one-third to over nine-tenths.

In Nebraska during the Rocky Mountain locust (grasshopper) outbreaks, Professor Samuel Aughey found large numbers of locusts in the stomachs of birds examined. Robins averaged 44, thrushes 22, catbirds 30, bluebirds 22, one kinglet 29, titmice 62, chickadees 53, nuthatches 23, warblers of four species 18 locusts each and 19 other insects, swallows of four species 33, bobolinks 14, meadow-larks 24, one blackbird 51, night-hawks 50, cuckoos 42, woodpeckers of five species 29 locusts and 25 other insects, owls of three species 32, hawks 42, buzzards 64, sage cocks 47; while orioles, ravens, crows, magpies, blue jays, pigeons, grouse, prairie-hen, quail, golden plover, snipe, sandpipers, godwits, tattlers, curlews, great blue herons, bitterns, sand-hill cranes, rails, coots, geese, ducks, pelicans and gulls, all came to join the feast from prairie, forest, air, shore, sea and inland lake, and even a tiny humming-bird (caught by a cat) was examined and found to have eaten four immature 'hoppers.

It is not alone insect outbreaks that attract birds, for an invasion of vermin is almost certain to be followed by increased numbers of birds of prey that feed upon such animals. An old English chronicle says that in 1581 mice appeared in countless numbers on grazing marshes in the counties of Essex and Kent, so that the pasturage was destroyed and the cattle appeared as though stricken with disease. No measures of control of man's devising were effective, but owls collected on the marshes from all the country about, and the marsh owners were "shortly delivered from the vexation of such mice." This invasion was repeated in 1648 and similarly checked; and in 1754, a correspondent of the *Gentleman's Magazine* wrote of another district of England, that a plague of mice recurring every six or seven years and "destroying the corn of every kind" was regularly followed by a "prodigious flight of Norway owls" which remained until the mice were destroyed. Mr. W. H. Hudson, in "The Naturalist in La Plata," speaks of the suppression of a mouse plague by storks and short-eared owls.

What might be regularly done by birds in controlling the common insect pests is shown by an experiment made by Professor Forbush, of Massachusetts. He came into possession of an old orchard in which insects and diseases had had full sway and had prevented the production of perfect fruit for many years. He protected the birds in this orchard by excluding so far as he could cats, boys and other enemies, and sought to attract additional birds by feeding and supplying nesting places. He watched the birds at work during the winter of 1894–5 and the following summer, and noted their destruction of fall and spring canker-worms, tent-caterpillars, codling moth, scales and other enemies of trees and foliage. The protection granted the birds was appreciated, and their numbers increased in spite of destructive agencies beyond Professor Forbush's control. The season was one of notable outbreaks of both tent-caterpillars and canker-worms, and practically all orchards of the township were defoliated and barren. The bird-protected orchard bore luxuriant foliage throughout the season and produced a good crop of fruit. The orchard of a neighbor adjoining and partly protected by the birds attracted to the Forbush orchard, also bore some fruit, but these two were the only ones in the neighborhood to give a harvest. This experiment was continued for several seasons with the result that the trees have been kept free from foliage-eating insects without spraying or other artificial protection, merely by protecting and encouraging birds. Of course, codling moth and apple-fruit maggot cannot be controlled by birds, since they feed beyond reach, but most other apple pests would be kept well under were birds as plentiful as they should be in orchards.

Other illustrations of this constant protective influence of birds are shown when bird life is accidentally or purposely reduced to a minimum. The King of Prussia was very fond of cherries and was so annoyed by the destruction of those on his trees by birds that he ordered the birds exterminated. The work was well done, and nearly all the sparrows and many other birds were killed and the others driven away. Within two years cherries and other fruits were wanting, the trees were seriously defoliated, and the king went to considerable expense to import small birds to replace those he had ordered killed.

Late in the eighteenth century woodpeckers and titmice for some reason disappeared from a large German forest, and within a few years many of the trees began to die from the attacks of the larvae of a wood-boring beetle which had increased amazingly when its bird enemies gave opportunity. In Belgium a large park was cleared of sparrows, which had come in great and annoying numbers the previous year because of an unusual supply of insect food. The following season the park again swarmed with insects, and the trees were practically defoliated by crawling ravagers, particularly the gypsy moth caterpillar.

In 1861, French harvests were so poor that a commission was appointed through the Minister of Agriculture to ascertain the cause. This commission employed experienced naturalists, whose investigations proved the crop shortage due largely to insect devastations. The insects had increased to this alarming extent because the French people then made a practice of killing for food not only game birds, but song birds as well. Guns, snares and traps had been in constant use all over the country; and even the eggs had been systematically collected, a single child having been known to bring in as many as 100 eggs at night. It was estimated that from eighty to one hundred million bird's eggs were destroyed each year. In consequence, some species of birds had already disappeared and others were rapidly diminishing; and, apparently as a result of the lessened numbers of birds, the vines, fruit trees, forest trees and grain fields, all suffered greatly from injurious insects. In one department (corresponding to one of our states) the value of the wheat destroyed was estimated at one million dollars. The commission recommended prompt and energetic measures to stop the slaughter and called on clergy and teachers to aid in showing the bird destroyers the harm they were doing.

In our own country, though the relation of cause and effect is not so clearly established, it is known that the greatest losses from grasshoppers followed the destruction by pioneers and plainsmen of countless thousands of blackbirds, prairie-chickens, quail, upland plover, curlew and other birds. By poison and in other wholesale ways, birds were killed in and about the grain fields in such numbers that their bodies were collected in piles. In one county alone 30,000 birds, mostly blackbirds, were destroyed; while it is estimated that from an area of thirty counties, 450,000 quail and prairie-chickens were sent to market. This slaughter began about 1865 and continued up to the time of the most serious locust outbreaks twelve years later. Is it unfair to assume that the locusts would have been less destructive if the birds had remained? Professor Aughey says in regard to the killing of 30,000 birds in one county: "Supposing that each of these birds averaged one hundred and fifty insects each day, we then have the enormous number of one hundred and thirty-five million insects saved in this one county alone that ought to have been destroyed through the influence of birds. When we reflect, further, that many of these birds were migratory, and that they helped to keep down the increase of insects in distant regions, the harm that their destruction did is beyond calculation. The killing of such birds is no local loss; it is a national, a continental loss."

To many farmers the loss of a few hills of corn, a quart or so of cherries or an occasional small chicken condemns birds; and to any suggestions that these same birds may be of more use than harm, the contemptuous answer is made, "How much good can a few little thieves like those do?" The amount of food needed by even the smallest bird is great. Birds are more active than mammals, they grow faster, live faster, breathe faster, their temperature is higher, their blood circulates faster and they must, therefore, eat more food and digest it more quickly than do animals. Especially when raising its young must the life of the bird be a very whirlwind of activity, for it must then supply, not from a reserve stored up in its own body but from material freshly gathered, enough food to build in from ten days to three weeks, from a weight expressed in fractions of an ounce to that of its own body or greater, from two to five nestlings. Only from condensed, palatable, easily-digested sources is it at all possible for the two parents to supply this amount of food; so we find that all birds, even those which as adults live on grains and seeds, depend largely on worms, caterpillars, insects and small animals for the demands of their young. For this reason, even the worst grain thieves often do much good during a certain period of their lives and make us hesitate before we condemn them offhand and finally.

Birds digest rapidly. By ten careful experiments with two birds, young crows were found to digest insects' eggs and pass the shells in less than an hour and a half, all of the food being disposed of in less than two hours. Cedar-birds passed the pits of black cherries in 45 minutes, while blackberries were digested in half an hour. The excrement of a thrush showed the stain of blueberries one hour and thirty-two minutes after the food was eaten.

Birds grow rapidly. Weed and Dearborn report that four young sparrows watched by them were out of the nest on the eighth day, and others record similar rapid development, although this is somewhat unusual. During one day a family of five song sparrows gained 48 per cent. in weight, while the smallest of the five did 5 per cent. better than to double his weight. My own family and myself left home, leaving a yellow warbler's nest in the vines on our front porch with eggs about ready to hatch. When we returned two weeks later, the young warblers had left the nest, thus depriving me of an expected opportunity for near-at-hand study.

Birds eat heartily. It is difficult to tell just how much food wild birds get and unfair to estimate the food of birds in nature from those in captivity, but the following facts and figures are at least suggestive of the quantity of insects, seeds, fruits and animals a growing bird family requires, and how active the parents must be to secure such amounts. Professor Herrick saw three young redwing blackbirds fed 40 times in four hours on one day, and 43 times in three and a half hours on another day. Four nestling kingbirds were fed 91 times in four hours; and two red-eyed vireos — small birds — took grasshoppers, katydids, green larvae, beetles, bugs of many kinds, or berries once every 15 minutes during two days and once every nine minutes the third day. Four young catbirds were fed 46 times in four hours.

A brood of cedar-birds watched by Weed and Dearborn ate at least 10 ounces of food apiece in 15 days, ten times their weight when they left the nest; and the same observers saw three young robins ten days old receive in two hours one bird cherry, one large cricket, one smooth caterpillar an inch and a half long, one moth, one harvest-man, one tumblebug, two earthworms, two beetles, eight spiders (probably) and 29 grasshoppers.

According to Dr. Stanley, a gull, kept and fed in a garden, devoured in one day fourteen mice and two rats. Mr. Charles W. Nash fed in the house a young robin that had fallen from its nest, and from May 21 to June 6 gave it from 50 to 70 cutworms and earthworms daily. On June 9 it weighed exactly three ounces; and it was supplied on that day with all the cutworms it would eat. It was satisfied with 5½ ounces, nearly twice its own weight when it began to eat, or a total of 165 worms. Dr. Sylvester Judd saw a mother house-wren visit her three young 110 times in 277 minutes, bringing 111 spiders and insects. Young crows kept by Kirkland and Ballou, Professor Forbush's assistants, lost weight when each was fed daily one ounce each of tomato, corn, muskmelon and beets, five ounces of meat and 50 grasshoppers — nine ounces in all, but gained somewhat on nine ounces apiece of tomato, melon and corn, supplemented by four frogs, a salamander, and all the grasshoppers they could eat. This feeding was continued for a long time with increasing quantities of food; and as a general conclusion Professor Forbush believes that young crows after they are well developed though still growing, with their feathers fully formed, require at least one-half their own weight of food daily, while they can use more to advantage. An adult crow kept by Weed and Dearborn consumed in three days more than three-fourths of his own weight of fish, which is equivalent to over 400 grasshoppers, a common food of the crow at that season of the year. The food of mature owls can be estimated from the bones, skulls, and feathers regurgitated in the form of pellets; and from such studies Dr. Montgomery shows that four owls in 59 days ate at least 12 small birds, 10 shrews and 600 mice, on an average of two and one-third animals, mainly mice, for each owl daily. In 22 days four other owls ate one finch, one shrew and 199 mice, giving about the same average per owl daily, two and one-quarter animals. These pellets were collected under the roosting places only, and as others were probably regurgitated elsewhere, the amount of food taken was undoubtedly greater than the figures indicate.

These figures show in a general way how and why birds may benefit agriculture; but no presentation of the subject would be at all complete that did not speak of the individual species or groups and their work; and in doing this it will be evident that some species are harmful and unworthy of protection.

Among those to which this character is commonly given are the hawks and owls, two classes, that, as a whole, are exceedingly useful. All should not suffer from the misdeeds of their few representatives who have acquired bad habits and cling persistently to them.

Very careful studies of the food habits of hawks and owls have been made by the unprejudiced scientists of the Bureau of Biological Survey of the U. S. Department of Agriculture, and they find about two or three species in each group that deserve death at the hands of New York farmers. Among hawks, the habitually predatory species are the Cooper's and sharp-skinned hawks and, occasionally, when he has located in thickly settled communities where young chickens are too temptingly plentiful, the red-tailed hawk. The goshawk and duckhawk are also on the excommunicated list, when they are found about the farm, but the goshawk rarely enters New York except in winter, and the duckhawk seldom leaves the vicinity of water.

Of the other birds of this group, the sparrow-hawk might better be called the grasshopper hawk, for where 'hoppers and crickets are abundant, these hawks congregate and rarely touch any other form of food until the supply of these insects diminishes. Then beetles, spiders, mice, shrews, small snakes, lizards and an occasional small bird fill the void left by the scanty supply of grasshoppers. The broad-winged hawk seldom attacks poultry or small birds, but confines its diet mainly to frogs, small snakes, toads, crayfish, chipmunks, red squirrels and the larger caterpillars, like those of the sphinx moth, cecropia moth and emperor moth, which so often feed upon the leaves of large trees. The rough-legged hawk is a mouse hawk, feeding almost exclusively upon meadow mice. Of 45 stomachs examined by the U. S. Department of Agriculture biologists, 40 contained mice, five contained shrews, gophers, rabbits or weasels, one contained insects and a lizard, and none contained poultry or birds of any kind. In Massachusetts hundreds of stomachs examined contained only meadow mice, and similar testimony comes from Oregon, Utah and Nebraska.

The food of 220 red-shouldered hawks, possibly the most common large hawk in western New York, was found to consist of 65 per cent. of mice, large numbers of insects and only one per cent. of poultry; yet as "hen-hawks" these are the target of every farmer's rifle or shotgun whenever opportunity offers. The red-tailed hawk undoubtedly does more good than harm; but about 10 per cent. of the stomachs of birds of this species contained poultry or game birds, and other stomachs held remains of many other more useful birds; so that one cannot censure very severely the gunner who destroys one of them in a raid upon the hen yard. The marsh hawk, also called "hen-hawk," does rarely pick up a bird, chicken or even a small fowl, but the great majority of its victims are meadow mice, squirrels, rabbits, ground squirrels, lizards, frogs, snakes and often, for dessert, a crop full of large grasshoppers.

Against the owls the prejudice is probably fully as great as against hawks; yet really only one common member of the family, the great horned owl, is ever sufficiently injurious to deserve condemnation, and that more because it destroys the useful skunk and a few game birds than by reason of actual damage to poultry. The snowy owl of the North might be a nuisance were he about in summer, and the barred owl and long-eared owl occasionally take an unprotected chicken roosting out of doors, but the harm the two latter do is far more than counterbalanced by the good. Against the rare barn owl, the screech owl, the short-eared owl and the saw-whet owl, hardly a syllable of reproach can be uttered, while the figures given earlier prove that they are of incalculable benefit in destroying mice and larger rodents. Yet many states have offered bounties for the destruction of these friends, the hawks and owls, though probably none do so now; and in New York State practically all are now protected. Dr. C. Hart Merriam, probably one of the best-posted students of animal life in America, made a careful estimate of the effect of the Pennsylvania bounty law during its life of a year and a half. His liberal figures placed the value of all poultry destroyed by hawks and owls in Pennsylvania during the time at about $2,000. But every hawk and owl killed would have destroyed 1,000 mice, each of which would cause farmers at least two cents damage, so that the state paid $90,000 to have the birds destroyed and the farmers lost $3,850,000 worth of property through the rodents these birds would have killed, all to save a loss in poultry of less than $2,000.

Any farmer who ignorantly destroys a hawk or an owl is running about ten chances to one of working himself or his neighbors an injury. All should learn the few injurious members of the two classes by sight and let all others alone, unless it is some individual of bad habits caught in the very act of carrying off poultry.

A bird which causes the farmer much more harm than all the hawks and owls is the cowbird. This homeless vagrant in itself probably does little or no harm, even some good, to the farmer's stock or animals; but each young cowbird reaching maturity means the death of a nest full of small birds of other species, and practically every small bird in whose nest the cowbird habitually lays eggs is an active insect destroyer or weed-seed eater and thus a friend and asset of the farm owner. Kill the cowbird.

That "rat of the air," the English sparrow, hardly deserves mention in a list of birds, so unlike most of them is it in quarrelsome disposition, slovenly home making, filthy disfiguration of buildings upon which it nests, distribution of the worst poultry diseases and parasites, impudent familarity and general uselessness. A few good points it has, to be sure, as it eats some insects and weed seeds; but it easily makes evil all its good by destruction of grain in field and shock, and, as it drives away far better bird neighbors, it deserves extermination. For such a fate for this prolific breeder, though, we need never hope.

The crow, also, I would condemn for much the same reason. The evil crows do by pulling corn and similar destruction of property for which the farmer condemns them is undoubtedly more than made good by the killing of white grubs, grasshoppers and other insects that the crow feeds on, but the crow is a robber and murderer and destroys the young of all the small birds he can find, either in the egg or as nestlings. He is also a worse enemy of poultry than are the hawks. This sly thief often reduces the housewife's collection of chickens rapidly and secretly, but the poor hawks, if one is ever seen in the neighborhood, have to take the blame and pay the penalty. I give my full permission for you to kill crows, but I do not anticipate that their numbers will be seriously reduced unless you are much more successful than most crow hunters I have known. The cunning rascal is well able to care for himself.

Another bird whose habits are not the best — and the only one of a considerable group that is not decidedly beneficial — is the yellow-bellied woodpecker or sapsucker. This bird is really injurious through his practice of boring holes through the bark of trees to feed upon the sweet sap and the tender growing tissues of the new wood. These holes are often so numerous and so neatly arranged in rows around the trees, that partial or complete girdling frequently occurs, and the holes afford entrance to bark diseases, making the sapsucker a menace to the orchard and forest. Fortunately he does not stay with us long in agricultural New York, but merely makes us a passing visit in spring or fall on his way north to the Adirondacks and Canada or south to warmer climes.

A few other birds are in a doubtful category. The blue jay with his crow-like theft of eggs of other birds and his quarrelsome disposition, but with brilliant coloring and lively ways that make us forgive him much; the catbird with his taste for fruit, balanced by good work on insects most of the year, his rippling song making us forget his most peevish, insistent call for "Mary" when not in the best of humor, while his ventriloquial imitations of the calls and songs of other birds make every bird lover vote for his protection. The robin, that one bird known to all, both city and country, the most common of our larger birds, is regarded with almost sentimental affection by nine-tenths of the children and women; yet the robin is occasionally a most destructive pest, and it is somewhat doubtful whether the good he does warrants unqualified protection at all times and in all places. His food habits are not above question, for with his diet of injurious or harmless insects, he takes many ground beetles that are themselves excellent "bug hunters," and he fairly feasts on earthworms, those most efficient earth miners and improvers of soil tilth. And when robins collect in flocks upon some choice cherry trees or in a berry plantation, they easily rob the fruit owner of both profit and pleasure. I believe they should be classed with rabbits in protection laws, and their destruction by any means allowed the owner of fruit they are ruining.

With these few exceptions, all our birds deserve protection and encouragement; for we find in the noble band a body of police, vigilant and eager in search of our enemies — insect, animal or weed. From their watchfulness not a foot of ground escapes, from doorstep to remotest woodland limit, from water-line or below it to the top of Mount Marcy. In the air birds of prey circle in their courses, from the ten-foot flight of the marsh-hawk over the meadows to the slow soaring of the rare turkey buzzard so far above us that he seems a mere speck against the blue, each in search of some crawling marauder below or some carrion that might pollute the air we breathe. About our roof tops and above them, the swallow and the swift, the night-hawk and the whippoorwill wage constant warfare against the mosquitoes, flies and gnats that so disturb our personal peace. In the vines upon our porches, in the shrubbery at the door or in some snug hole in post or tree nest the wren, the chipping sparrow and yellow warbler, each bringing from nearby lawn, garden and orchard its almost unbelievable toll of insects to feed its growing young; on the lawn work the song sparrow, robin, bluebird and grackle; in the dooryard trees the vireos and fly-catchers chase the darting flies and moths; in the orchard the kinglets, creepers, woodpeckers and some of the warblers search the bark and beneath it for eggs, larvae and boring beetles; and other warblers, the finches, the thrushes, the waxwings, the tanagers, the grosbeaks, the orioles and the cuckoos try to keep twigs and foliage free from caterpillars, bud-moths, leaf-rollers and case-bearers. Behind the plow in garden and field stalk the robin, the blackbird and the crow searching for white grubs and cutworms; in the meadows and on pastures the meadow-lark and bobolink, the pheasant and the quail, the field and savannah sparrows, the killdeers and upland plovers, hunt for grasshoppers and crickets, while the sparrow-hawk sails above to capture on the wing the 'hopper that thinks to escape his enemies by flight. From the edge of the woodlot the fox sparrow, towhee, veery, oven-bird and hermit thrush make forays on the ground, while kingbird, pewee and crested flycatcher supervise the aerial realm. In the marsh edges work the swamp sparrows and marsh wrens, the redwinged blackbirds and tree swallows and the woodcock and the snipe in spring and fall. Along the creeks and larger bush-lined ditches, the catbird loves to hide and the kingfisher rolls his startling call; and at the water's edge skulk the yellow throat, the water thrush and the little spotted sandpiper. The shrubby fence rows serve as retreats for the brown thrasher and the grasshopper sparrow; while nesting in the forests, but seeking food far afield, are the woodpeckers, now, alas, all too few. The goldfinch seeks the dandelion where'er its snowy balls are shown, and later strips the thistle's downy balloon of its load of seed; but when fall comes joins its fellow sparrows in a more prosaic hunt for seeds along weedy roadsides or in neglected fields.

Thus at practically every point upon the farm or where farm land touches forest, water or air, we have bird friends, many of them eating only that which works us harm, is useless to us in any way, or is a waste remnant of some useful crop. A few take a little toll of fruit, grain or poultry, but repay tenfold the harm they do by their faithful service against our pests. All deserve protection and encouragement. Give them nesting places and kill off the predatory cats and red squirrels that fill their lives with anger and fear. In times of stress provide a little food or drink to earn their confidence and gratitude or perchance to save them from distress and death. Teach your collection-eager youngster that stamps or old coins are far more worth his time than bird's nests or eggs, and as he gets a little older and is dying to test his rifle, show him some better mark than redheaded woodpecker or marsh-hawk. And when the lady of the household seeks a new hat, persuade her to obey our beneficent state law and not send to Philadelphia or elsewhere for heron plumes, aigrettes, or other forbidden trophies of bird slaughter.

These are all little things for any one person to do, but their general application, with the widespread education which their adoption would involve, would mean much to bird life in this state and would help at least to bring back our feathered friends in numbers that would simplify one of the perplexing problems of crop raising — the control of insects and weeds.

INJURIOUS INSECTS

By P. J. Parrott

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The meteorological conditions of the season of 1911 were abnormal throughout the state and materially affected the development of crops and the insects that infest them. The drouth was severe and prolonged, commencing in early May and lasting well into August. These seasonal conditions were apparently exceedingly favorable for scale insects, and in many localities in the state the destructive work of the San José scale has attracted much attention. The marked spotting of apples by the late broods caused consternation, especially in those communities where comparative immunity from the work of scale in recent years had encouraged the false hope that as an important fruit pest its death knell had been sounded.

DATES OF APPEARANCE OF YOUNG SCALES

Of the factors that account for the increased destructiveness of the scale, mention should be especially made of the long breeding season. The production of the first brood of larvae commenced at an unusually early date, and because of the absence of freezing weather propagation continued until late in the fall. The records for the past five years (1907–11) on the appearance at Geneva of the young scales of the first brood are in this connection of considerable interest and are as follows:

1907	July 4
1908	June 23
1909	July 3
1910	June 26
1911	June 12

FAILURES TO CONTROL SCALE BY SPRAYING

The appearance of an insect in superabundant numbers is invariably attended with more or less complaints of failures with the usual preventive and repressive measures. The unfortunate experiences of some growers with the scale during this season has again raised the question of the relative merits of the different sprays for this pest. The comparative values of the various mixtures have been thoroughly discussed in Geneva Bulletin 296, and it is not necessary to reiterate our conclusions except in a casual manner. The sulphur wash, considered on the basis of efficiency, economy and safety to the trees, is without question the most satisfactory spraying mixture for the average grower. Few fail to control the scale with this spray on small trees, and the principal problem in the treatment of old apple orchards is largely one of mastering practical difficulties. The old trees present more serious obstacles to successful treatment than exist with other plantings. The trees are high and spreading, and the large limbs obstruct the spray and the view of the operator, while the pubescence of the new growth and the old bark may protect many scales. To spray a large tree well requires time and patience. We attribute failure to control the scale, not to any deficiency in the lime-sulphur wash, but to poor spraying largely arising from inefficient and disinterested laborers, careless supervision and inadequate spraying machinery.

HOME-MADE CONCENTRATED LIME-SULPHUR SOLUTION

The home-made, concentrated lime-sulphur solution is growing in favor with the fruit growers. Considerable quantities of it were made during 1911, and much more of it will be prepared and used during the coming year. Its chief merits are that it is more economical than the commercial brands and more convenient to prepare and use than the common lime-sulphur wash, because of its keeping qualities and freedom from clogging sediment.

THE PEAR PSYLLA

As this pest has been abundant and very destructive during the past three years, there have been exceptional opportunities to carry out a large series of spraying experiments to determine more efficient methods of control. These were chiefly undertaken to determine the susceptibility of the hibernating adults and their eggs to spraying mixtures. It is believed that these stages are more vulnerable to treatment than has generally been accepted, and that field tests would show that there are various measures which could be used with considerable advantage against both adults and eggs to supplement present spraying practices.

The number of orchards treated in these tests were forty, and they were distributed in the leading pear districts of the state. On account of the large series of tests, arrangements were made through the courtesy of Commissioner Pearson for the nursery inspectors to direct the field operations in their respective districts. These tests are peculiarly valuable, in that they have shown the sensibility of the adults and eggs to treatment and have given consistent results in a large number of orchards, which would seem to have safely established our conclusions.

On the basis of the season's work, we would recommend the following preventive and remedial measures for the protection of orchards from the psylla:

1. *Clean culture.* Flies may spend the winter in accumulations of matted weeds and leaves. The object of clean culture is to do away with all possible hiding places for the insect during the winter.

2. *Removal and destruction of rough bark.* The rough bark provides shelter for the psylla during the winter and is the chief obstacle to thorough spraying during the dormant season to kill the hibernating flies. Remove the loose bark with a dull hoe or floor scraper, preferably during a wet period. Care should be taken not to cut into live tissues. All scrapings should be burned in order to kill the flies attached to the bark.

3. *Spraying of the trunks and large limbs to kill hibernating adults or "flies."* The most efficient sprays are whale-oil soap, 1 pound to 5 gallons of water, or a miscible oil diluted with fifteen parts of water. The treatment should be made in early March before the flies leave their winter quarters. Apply the spray with much pressure, directing it into every crack and crevice and under all projecting bark.

4. *Spraying with the lime-sulphur wash to kill psylla eggs.*

Lime-sulphur wash at winter strength is fatal to the eggs about to hatch and the newly-hatched nymphs. To kill the largest number apply the spray just before blossom clusters separate at the tips.

5. *Spraying to kill newly-hatched nymphs.* The larvæ or newly-hatched nymphs of the pear psylla are very vulnerable to spraying, and those of the first brood especially so, because there is less interference by the foliage to spraying mixtures. The majority of the eggs hatch just before or during the blossoming of the trees. One or two thorough sprayings at this time should effect the destruction of practically all the larvae and thus avoid the necessity of further treatment during the remainder of the summer. The nicotine preparations with soap are the most satisfactory sprays for this purpose. There are now on the market two nicotine preparations guaranteed to contain 2.7 and 40 per cent. of nicotine, respectively. These have proven very efficient sprays. The 2.7 per cent. brand should be diluted with 65 to 90 gallons of water, and the 40 per cent. brand should be diluted with 1,000 to 1,200 gallons of water.

THE FUNDAMENTALS OF SPRAYING

By E. P. **Felt**

State Entomologist of New York

Spraying is protective, not curative; it is a species of insurance, not reimbursement; it differs from both life and fire insurance in that returns are not conditional upon demise or destruction, but upon production. The profits are proportionate to the activity of insect pests and the development of fungous diseases, and yet the assurance of comparative crop safety is worth something.

Does spraying pay? The mere fact that most commercial orchardists and a large number of farmers spray one or more crops would indicate that this is a paying operation. The cost of spraying six trees last year was 48 cents, or less than 12 cents for each barrel of fruit kept from being thrown into the second class or cider apples because of injury by the apple worm or codling moth. These six trees were representative of conditions obtaining throughout a large orchard and clearly indicate that the thorough spraying was profitable. In another orchard six trees, sprayed at a cost of about 10 cents each, produced eight barrels more of sound fruit, the cost of spraying amounting to 7½ cents per each barrel, which would otherwise have been wormy. The check or unsprayed trees in this orchard produced over 32 barrels to the hundred of wormy fruit, while the trees treated as mentioned above yielded less than two barrels per hundred of wormy fruit. These are only two illustrations of the profits resulting from spraying and by no means represent the maximum returns, since the orchards were not badly infested. Many similar instances might be cited.

The first essentials in spraying are a recognition of the need and a knowledge of the insects or fungi causing the trouble. Spraying for San José scale is practically of no value for the control of the codling moth, while the poison used for the destruction of this insect has no effect upon the developing plant lice; in other words, sprays must be adapted to local needs, and the farmer and fruit grower should first of all know something about the more injurious insects affecting his crops, otherwise the results are apt to be extremely unsatisfactory.

Assuming this knowledge, we must next select materials best adapted to our needs. A lime-sulphur wash, one of our most important contact insecticides, is extremely valuable as a fungicide and is the most generally used preparation for the control of San José scale. There are a number of widely differing formulae for the preparation of this wash, and if directions are followed, the product will be efficient if thoroughly applied. The earlier formulae called for an excess of lime, namely, 20 pounds of lime and 15 pounds of sulphur, while the one most generally used at the present time reverses these proportions and requires 80 pounds of sulphur and 40 pounds of lime to 50 gallons of water. Detailed directions for the preparation of this are given in Geneva Bulletin 330. This is known as the home-made concentrated wash and is practically identical with various commercial brands of lime-sulphur washes, except that the latter contain more lime sulphides in solution and consequently give a higher reading on the Baumé scale and, on account of their containing more material, are correspondingly valuable. The lime-sulphur wash should be tested with a Baumé hydrometer and then diluted, so that the wash when sprayed upon the trees will give a reading of 4½ to 5 degrees on the Baumé scale. No harm will be done if a somewhat stronger wash is applied, though a weaker solution is very likely to give unsatisfactory returns. On this account we would favor testing both the concentrated and the dilute mixture, using hydrometers made specially for each strength, to avoid any possibility of a mistake in dilution. These tests, it might be added, should be made with the liquids at a temperature of about 60 degrees, and care should be exercised to see that no visible sediment occurs in the sample. A high-grade, concentrated lime-sulphur wash, commercial or home-made, should contain practically no sediment. The great advantage in using a lime-sulphur wash for the control of San José scale is its harmlessness to trees and also its valuable fungicidal properties. Applied in early spring before the buds burst, it is a specific for peach leaf-curl and is also effective in controlling the apple blister-mite.

This wash may also be used as a fungicide when spraying for the codling moth within a week or ten days after the blossoms fall, preferably early in this period. The commercial wash testing 33 degrees, when used in this manner, should be diluted 1 to 40, and care taken not to flood the foliage with the spray. Many orchardists prefer to use the dilute lime-sulphur wash as a fungicide rather than the bordeaux mixture.

A miscible oil is sometimes used in place of the wash for the control of San José scale and blister-mite. This, either home-made or commercial, is not entirely safe, owing to the fact that under certain unusual climatic conditions, serious injury may result. Such a preparation appeals to many, however, because it spreads more readily than the lime-sulphur wash.

Other contact insecticides most generally employed for the destruction of sucking insects during the period when trees are in leaf, are a whale-oil soap solution or a kerosene emulsion. The former may be used at the rate of about 1 pound to 6 gallons of water, the minimum dilution being 1 pound to 4 gallons of water. The standard kerosene emulsion is generally diluted with 9 parts of water, though in the case of unusually resistant insects, it may be diluted with only 5 or 6 parts of water. In any event, when spraying with either of these dilute contact insecticides, one should aim to cover the insects with the preparation, especially when they are unprotected by a cottony secretion, as in the case of young scale insects, or unsheltered by rolling leaves as, for example, during the beginning of an attack by plant lice.

The contact insecticides mentioned above are used largely for sucking insects; most of our biting insects, those which actually devour portions of the plant, are more easily destroyed with a poison. The rule for spraying with a poison is quite different from that applying to a contact insecticide. The object in the latter is to cover every portion of the plant, both leaf and fruit, with small particles of the poisonous mixture, so that the insect must take a poisoned ration or migrate.

The most satisfactory poison for destroying leaf-eating insects is arsenate of lead. This is usually employed at the rate of 2 pounds (15 per cent. arsenic oxide) to 50 gallons of water. Much larger amounts can be applied without injury to the foliage, provided the arsenate of lead is of good quality. The standard grade of arsenate of lead should contain 15 per cent. arsenic oxide and should invariably be purchased on the arsenic content, since this is the real poison, the water and other materials being practically inert. There have been in the past low-grade arsenates of lead, usually put out under a trade name, sold for as much and, in some instances, for even more than a standard product containing two to two and one-half times as much poison. Our present insecticide law compels every manufacturer selling in the state of New York to print upon the label the guaranteed percentage of essential ingredients, consequently it is comparatively easy to ascertain the value of an arsenate of lead. Commercial brands of this poison are on the market in very convenient-sized packages. Paris green, London purple and arsenite of lime are all giving way to the somewhat more costly arsenate of lead, since the latter has important advantages, i. e., it can be applied in large quantities without injury to the foliage, and moreover, is extremely adhesive. There are a few cases where paris green may be advisable, namely, in the case of a very severe infestation by canker-worm, since this poison kills more quickly than the arsenate of lead.

The selection of a spraying outfit is of much importance. It is not only inadvisable, but wasteful, to spend money on so-called cheap outfits. A pump designed for use with insecticides should have a brass cylinder and metal valves. It should work easily and be capable of maintaining a heavy pressure. There are numerous pumps of this character on the market. Excellent work can be done with a hand pump, though wherever there is a large area to be sprayed, it is probable that better results will be secured by the use of some type of a power sprayer, particularly as the latter usually maintains an abundant and even pressure with ease, especially if there is a good-sized air chamber on the pump. Both hand and power outfits should give a pressure of at least 80 pounds, and in the case of the latter, 125 to 150 pounds is much better. Higher pressures, such as 200 pounds, greatly increase the volume of liquid passing through the nozzles and render possible a much larger amount of thorough work within a given time. This latter is extremely desirable, since the spraying season is limited and the capacity of the outfit rarely sufficient to do all the spraying at the very best time.

Next in importance to a good pump is satisfactory agitation. It is impossible to secure uniform results unless the spray material, be it a lime-sulphur wash or a poison solution, be homogeneous throughout the entire period of operation. A violent agitation, preferably automatic, is an essential.

The tank containing the insecticide, be it for a hand or power pump, should be so constructed that it can be tightly closed, thus keeping the spraying mixture from splashing out and preventing leaves, twigs, etc., from dropping into the tank. There should be a convenient strainer through which the spray material may be poured when filling the tank, and a convenient provision made for draining out everything at the bottom, otherwise there may be considerable accumulations of grit, dirt, etc., making it extremely difficult to keep the end of the suction hose clean. This latter should invariably be protected with a fine wire netting.

There should be an abundance of hose with either a hand or power outfit. It is impossible to do thorough work if the operator is limited in his movements and unable to take a position which will permit of rapid and thorough work. The hose should be supplemented by a nozzle extension. This may be either a bamboo rod with a light, brass tube through the center or an ordinary half-inch gas-pipe some 8 to 12 feet long. If the latter is used, it is desirable with the 12-foot length to have larger pipe at the lower end in order to improve the balance. The gas-pipe is cheaper than the bamboo rod, and experience has shown that for many types of spraying it is fully as satisfactory. Some fruit growers attain practically the same results by tying the hose to bamboo poles, adjusting the nozzles so that they will discharge in a certain direction. This modification is particularly adapted to small trees.

A tower is an important accessory in level orchards, especially when the trees are moderate to large sized. A collapsible tower is excellent in orchards where the trees are thickly planted.

Spraying is difficult, hard, disagreeable work, and everything practical should be done to facilitate operations.

The arrangement of the nozzles and the direction of the discharge are important, especially in the spraying for such an insect as the San José scale or the codling moth. A *Y* at the end of the nozzle extension permits the use of two nozzles and, other conditions being equal, practically doubles the efficiency of the man holding the rod. We much prefer an angle discharge, either 45 or 90 degrees, depending somewhat upon the height of the trees and the length of the rod. The 45-degree adjustment will enable one to throw the spray higher into the air, though it cannot be directed so well down into the upturned blossom ends, something of much importance in controlling the codling moth.

The type of nozzle should receive careful attention. The early Vermorel nozzle was a distinct advance over its predecessors, in that it delivered a fine, drifting spray, though the distribution was extremely limited. The improved nozzles of this type, frequently known as disk nozzles, are considerably larger, have a wider distribution and, with the disks having large holes, produce a coarse spray which can be directed much better than the earlier drifting mist. Two nozzles of this type should be adjusted on the *Y* so that the sprayed areas will overlap. This is the type which has been generally used in our experimental work against both the San José scale and the codling moth and which has given most satisfactory returns.

The recognition of the profits accruing from spraying, a judicious selection of the insecticide to be applied and the possession of satisfactory apparatus, means disappointment unless the importance of two other factors, namely, *timeliness* and *thoroughness* is recognized. The best time for spraying can be ascertained only after some knowledge of the habits of the insect or the development of the fungus to be controlled. In the insect world it is well known that many young caterpillars succumb much more readily to poisons than after they have attained their growth. An early spraying, under such conditions, destroys the pest and there is practically no injury to the trees. Late applications may kill the caterpillars, though possibly not until most of the leaves have been devoured. The latter procedure is decidedly wasteful. Our experiments the last two years with the codling moth show that a spraying within a week or ten days after the blossoms fall should result in from 95 to 98 barrels of sound fruit out of a hundred on trees producing a fair crop. A spraying three weeks after the blossoms fall, namely, a week or ten days after the close of the period when this work can be done to best advantage, is less than one-half as effective, the treated trees producing only about 77 barrels of sound fruit out of a hundred, while the unsprayed trees yielded nearly 69 barrels out of a hundred of worm-free apples. Similar restrictions are true of a number of other insects and applicable to many fungous infections. Our work must be timely if we would secure satisfactory returns.

It would seem as though no one would need to emphasize the necessity of thoroughness in spraying, yet practical experience shows that extremely few have any idea as to what thorough spraying really means. It seems easy to drive up to a tree without foliage and cover every particle of the bark, trunk, branches and twigs with a lime-sulphur wash, yet practice shows that this is extremely difficult and, judging from the returns from certain districts, rather unusual. Those who have not learned how to spray thoroughly in the hard school of experience, should certainly add as a marker a pail or two of milk of lime to each barrel of the wash and then make a practice of closely examining sprayed trees the following day. Any spots not well covered with the spray should receive a second application. A conscientious adherence to this method will soon result in thoroughness in application.

The treatment of trees in foliage is much easier than when they are dormant, yet even here there is an excellent opportunity for the exercise of judgment. The aim in spraying trees at this time should be to cover practically every leaf with small, isolated particles or drops of spray material, in such a manner that only small portions of the leaf will be exposed and yet no dripping result. This comes likewise by practice and a careful inspection of the work until the desired standard is attained. Even men of considerable experience may misjudge the character of their work. Several years ago, when spraying some experimental trees, the owner, a man of much practical experience, considered that one of the trees had been well sprayed. It was pointed out that a certain portion was not well covered with the poison, and, owing to local conditions, no further spraying was done. A record was made, and although this tree bore more fruit than any other in the plot and, other things being equal, should have yielded a larger percentage of sound apples, it produced 2 to 3 per cent. more wormy fruit. It will be readily seen from the above that thorough spraying means rigid adherence to the highest possible standard.

Thoroughness is so important, in fact, fundamental, that we believe many orchardists and farmers who must entrust their spraying, in part at least, to hired help, might well give the man at the nozzle a substantial incentive to do the most thorough work possible. He is the one who does the execution, and too much care can not be taken in his selection and in providing him with every requisite for rapid and thorough work. We should remember that a chain is not stronger than its weakest link, and any defect in our method of spraying is bound to have disastrous results.

The above, while essential or extremely desirable, do not meet all the requisites of the best orchard practice. Too many are inclined to spray the orchard when there is a large crop, holding the treatment in off years as unprofitable. We would urge upon all progressive fruit growers the desirability of adopting a system of spraying, which may be profitably followed year after year, because, in this manner alone, can we obtain the best results, especially in controlling such a pest as the codling moth. Trees producing a large crop one year, so characteristic of the Baldwin, need protection from insect enemies and fungous diseases the following, in order to store sufficient energy to produce a large crop the next season. Furthermore, with such an insect as the codling moth, which makes no heavy draft upon the vitality of the tree, it is extremely desirable to prevent the pests from multiplying freely in off years and thus producing conditions likely to result in much wormy fruit later. The bud-moth and the pistol and cigar case-bearers are three destructive insects which should be kept in check by annual sprayings. We have known of instances where serious injury by another leaf feeder, namely, the cankerworm, has resulted in unfruitful trees; and the same condition is likely to follow an abundance of either bud-moth or case-bearers. The production of large crops of high quality fruit necessitates vigorous trees, practically free from insect pests and fungous diseases, a condition which can be brought about only by thorough and systematic treatment annually.

THE CONTROL OF CERTAIN PLANT DISEASES[1]

By F. C. Stewart

Botanist, New York State Agricultural Experiment Station

In reply to a question as to the value of lime-sulphur for spraying potatoes, the following account was given of an experiment made at the Geneva Station during the season of 1911.

Twenty rows of potatoes 412 feet long were used for the experiment. Five rows were sprayed with lime-sulphur, 1 to 40, the dilution recommended for orchard spraying; five with lead benzoate, 1 pound to 50 gallons of water; five with bordeaux mixture, 6–6–50 formula; and the remaining five left unsprayed for checks. Six very thorough applications were made at intervals of two weeks, commencing when the plants were six to eight inches high. Bugs were controlled on all rows by two applications of arsenate of lead. No late blight appeared in the field and both early blight and flea beetles were very scarce. The only disease of consequence was tip-burn, a browning of the leaf tips. This began to appear about September 10 and steadily increased until all except the bordeaux rows were finally killed by it. During October the bordeaux rows were very conspicuous. They were larger, freer from tip-burn and outlived the other rows. The lime-sulphur rows, on the contrary, were smaller than the checks, quite as much affected with tip-burn and died at the same time as the checks. However, the lime-sulphur did not burn the foliage.

Similar differences were shown in the yields which were as follows:

Rows	Bushels marketable tubers per acre
Check	175.7
Bordeaux	276.0
Lime-sulphur	136.2
Lead benzoate	169.7

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[1] Report of Conference on Plant Pathology at Normal Institute, 1911.

Gain from use of bordeaux, 100.3 bushels per acre.

Loss from use of lime-sulphur, 39.5 bushels per acre.

Loss from use of lead benzoate, 6 bushels per acre.

Only one conclusion can be drawn, viz., that lime-sulphur cannot be profitably substituted for bordeaux in spraying potatoes. Apparently it lacks the stimulating influence possessed by bordeaux and has, instead, a tendency to dwarf the plants and reduce the yield.

Of course, the conditions under which this experiment was made were somewhat unusual — the growing season was exceptionally long (158 days), the spraying was done with extreme thoroughness and there was no blight.

As the result of a brief discussion on the physiological explanation of the stimulus produced by bordeaux, it was agreed that no satisfactory explanation has yet been offered; in fact, some investigators deny the existence of such stimulus.

It was reported that in New Jersey the use of lime-sulphur on apple foliage during the past year had, in some instances, resulted in injury. No one present had knowledge of any such injury in New York, and it was agreed that lime-sulphur should be recommended for spraying apples.

Concerning the use of self-boiled lime-sulphur for spraying peaches, it seemed to be the opinion of those present that the success of the mixture in the South warrants its trial in New York orchards in which peach rot and scab are troublesome. The suggestion was made that, inasmuch as the self-boiled lime-sulphur mixture is not boiled, and the chief difficulty in making it is the liability of over-cooking it, it would be better to call it "Scott's mixture."

The ten-year potato spraying experiments conducted by the Geneva Station have been concluded and at Geneva the average gain from spraying every two weeks (5 to 7 times) has been 97.5 bushels per acre, and that from three sprayings, 69 bushels. The duplicate experiment at Riverhead has shown an average gain of 45.7 bushels per acre for spraying every two weeks, and 25 bushels per acre for three sprayings.

Some of the data relating to the farmers' business experiments are not yet in, but the average results of nine years, covering 114 experiments, are approximately as follows:

Average increase in yield, 36.1 bushels per acre.

Average expense of spraying, $4.73 per acre.

Average net profit, $14.43 per acre.

The apple fruit spot disease was unusually common in 1911. There are two forms of this disease, one due to a parasitic fungus, the other to physiological causes. The form most common in this state is the physiological one. The symptoms consist of the appearance of small, sunken spots on the surface of the fruit with pockets of brown, corky tissue underneath the skin. Sometimes spots of brown, corky tissue are scattered irregularly through the interior of the fruit. The cause is not well understood, but it seems to be due to some disturbance of the water relations. It is most prevalent in dry seasons. No remedy is known except the planting of varieties least subject to it. Unfortunately, the Baldwin, which is one of the leading commercial varieties, is also one of the varieties most susceptible to fruit spot.

With regard to the control of the powdery mildew of the hop, it was stated that the disease has been very prevalent and destructive the past season in Oneida and Schoharie counties. Experiments with dusting the plants with flowers of sulphur have been very successful; several growers having saved their crops by this method. Flowers of sulphur give better results than the flour of sulphur. The quantity required is from 40 to 50 pounds per acre.

THE HOUSE AND ITS CONTENTS

By Helen Binkerd Young
Lecturer in Home Economics, Cornell University

The home economics ideal is that of efficiency in all departments of the home. To secure the greatest good with the least expenditure of money and energy is its manifold problem. The arrangement of the house, or the house-plan, lies at the very core of domestic economy; for it is clear that, although dozens of conveniences may be devised to lighten housework in general, if a woman is walking unnecessary miles a day over an inconveniently arranged floor plan, one of the greatest sources of economy has not yet been touched. It is, therefore, vital that all women shall know something about the elements which constitute an economical house-plan and how the house may be arranged to secure the greatest beauty and the greatest comfort. Efficient work in business or home is possible only where system and order prevail; so an efficient house-plan is possible only when the divisions of space (rooms) are arranged in a systematic and orderly manner. In other words, it must be in a sense architectural, in order to produce the greatest conveniences.

Most plans are too wasteful; every foot of enclosed space should serve a definite purpose. A study of house-planning does not, however, enable one to become his own architect any more than a study of sanitation enables one to become a physician; but it does enable one to direct the making of the plans with intelligence and assurance. Having grasped the essential points of good house-planning, one may apply them to any form of abode, from apartment to farm-house.

Since physicians, psychologists and other scientists have proved beyond a doubt that many nervous and other disorders are caused or increased by jarring colors and forms as well as sounds, it becomes vital that the contents of the home shall be carefully studied to avoid such mistakes. Questions of household decorations and furnishings are no longer trivial matters, and it behooves us all as sane creatures to abolish sham, trash and stimulating colors, and place in our homes purposeful decoration and serviceable furnishings, which shall set up as a standard of beauty the virtues of simplicity, honesty and usefulness.

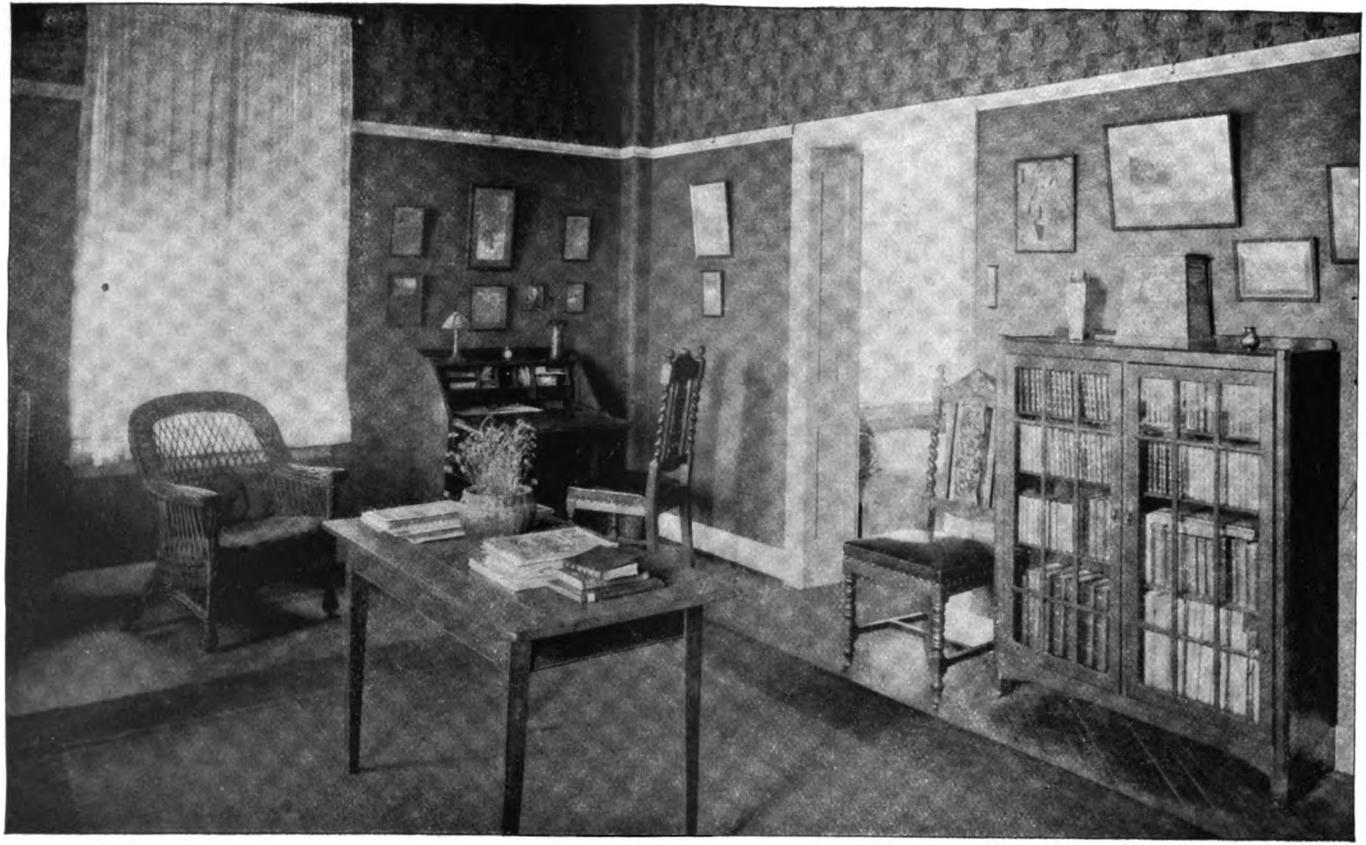

FIG. 72.—A PLEASING INTERIOR.

A PLEA FOR A PERMANENT RURAL ARCHITECTURE

By Linton B. Crandall

Department of Industrial Mechanics, Alfred University

Did you ever see a house that looked like a farmhouse? I have seen a few, but most of the houses we see about the country would look just as much at home in any village or suburban section of any city in this country. I believe a man's house should be as carefully adapted to his particular needs as are his clothes or anything else which is for his personal use. Usually the average man lets some contractor do the large part of the planning, and he does very little thinking about the matter; almost the whole plan is made up according to some house which the farmer has seen or which the contractor has built. Architects do not plan houses for farmers, there is not money enough in such work; besides, farmers as a rule have not thought enough about their houses to wish for expert planning.

There are certain characteristic features which every farmhouse should possess. It should be low and broad on the ground, rather than narrow and tall, both because land is cheap and because this style of house makes work easier. This house should have on the first floor a large living-room, an office for the farmer, a dining-room, a nursery or rest room for the wife and mother, a kitchen, one or two bedrooms, if possible, and a wash room where the men may wash and change their outer working clothes before sitting down to meals. The second floor should contain additional bedrooms, a bathroom and plenty of closet and storage space.

The living-room in this house should have as the central feature a large fireplace in which real wood may be burned, and plenty of windows on at least two sides of the room. The office or den for the farmer should be a medium-sized room with an entrance directly from the outside, so that business visitors need not pass through the other rooms of the house to get to it. The farmer's library, desk and safe should be in this room. The dining-room, nursery and wash room should be located adjacent to the kitchen, and should be furnished with the necessary fittings for each. The wash room should, if possible, be so located that the men will not have to pass through the kitchen to get into the dining-room. A rather small kitchen is better than a large one, because it can be more compactly arranged, so that the necessary walking in order to do the work will be less, and it should be provided with plenty of cupboards for storing dishes and cooking materials. The location of the range, sink, dish cupboard and dining-room door should be as close and compact as possible so as to save steps. A pantry for the storage of supplies, opening from the kitchen, and a toilet and lavatory out of the nursery should not be neglected.

A place out-of-doors, where the women may sit and work in the shade during hot weather, as a porch or clump of trees near the house, should by all means be provided. The cellar and woodshed should be handy to the kitchen, and such a thing as floors on different levels between most-used rooms should not be tolerated.

No farmhouse should be without good systems of water supply and sewage disposal; both may be installed for $300 or less. One of the pressure-tank systems is best for water supply where a sufficient head cannot be readily secured. With gasoline and oil engines in such a variety and so reasonable in price, there is no excuse for any farmer being without a good supply of pure water. For sewage disposal in the country nothing is better than the septic tank.

The selection of the materials of construction for the farmhouse is very important and one which should not be left to chance or to ill-advised economy. Wood is too expensive when you consider how easily it rots and burns and how much paint it takes to protect it. As a rule, farmers have not the facilities for fire protection, so that their buildings are more likely to be destroyed by fire than those of village or city dwellers. Bricks make good building material, but are expensive and are subject to dampness and decay from the action of water unless the best grades are used. Hollow vitrified tile make an excellent wall when used alone or with brick facing. They are readily plastered on both sides, thus making a finished wall without use of lath, and are thoroughly

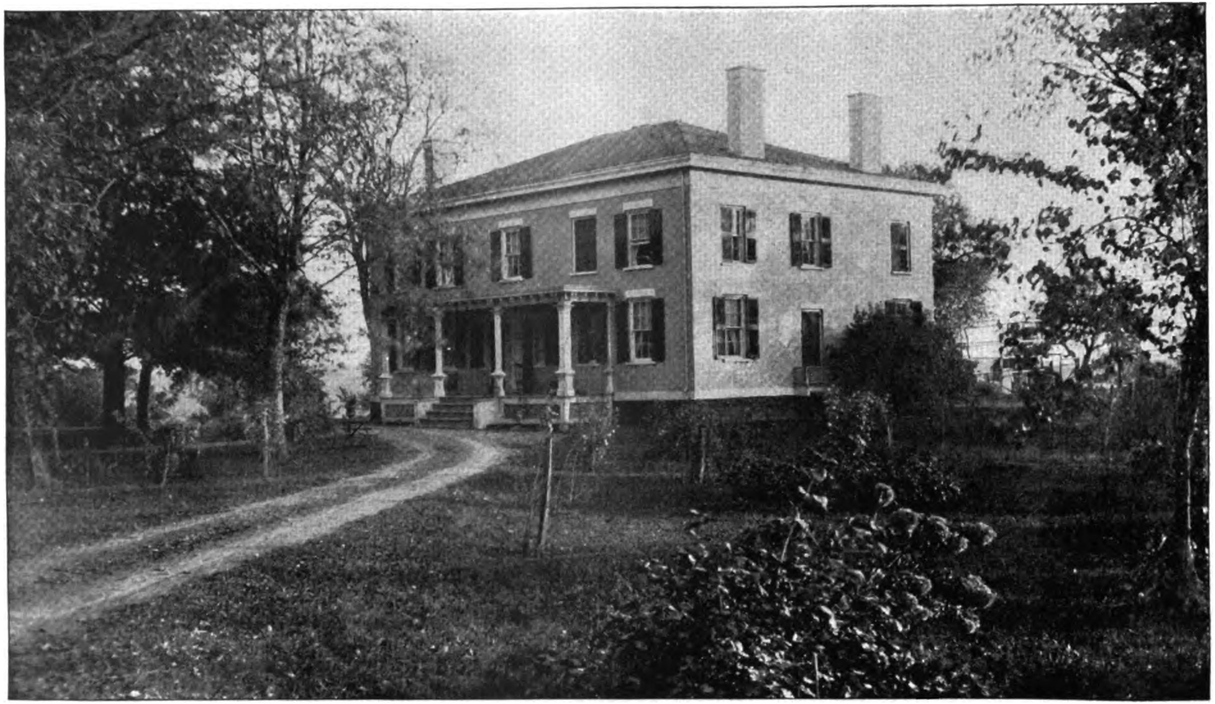

FIG. 73.— A FARMHOUSE REPRESENTING THE PERMANENCY OF FARM LIFE.

The home for 90 years of direct descendants of the pioneer owner of the farm (1680).

fire-proof; they also make a cheaper wall than brick, and one which is warm and dry. Being of large size, they are easily and cheaply laid, and reinforcement may readily be had through the holes and lengthwise in the joints between courses. To my mind this is the best building material which a farmer can buy.

Cement, either in solid walls, hollow walls or in blocks, offers a very good building material, with this advantage, that the farmer can do a large part of the work himself or with cheap labor. Unless well built, however, cement construction may fail. There are many things which may contribute to such results, as dirty sand and gravel, improper mixing, too lean a mixture, insufficient water, etc., which must be looked after in case one uses cement. Cement stucco, either on metal lath on wood frame or on cement blocks, makes a good building material. It offers full protection against fire when used on cement blocks and some protection when used on wood frame, saves paint and gives a pleasing finish to a house.

In all construction, the foundation is of most importance, for a poor foundation will ruin the best construction ever built. Settling will cause cracks to start, and a cracked wall will let in cold and dampness, thus causing the decay of the wall.

One of the primary laws of art is simplicity. Too many of the houses we see about the country have a lot of gimcracks about the porches and in the gables. Such decorations do not add beauty, but take away that finer, richer look from a house; besides this, sawn filagree work and turned spindles take much paint and time to keep them in shape. Good proportion in a house is of more value than any decoration.

HUMAN NUTRITION

By Flora Rose

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You have all heard the adaptation of an old saying, "Tell me what you eat and I'll tell you what you are." As you follow discussions concerning the feeding of farm crops and animals, you realize that there is very much more than a grain of truth in this, and it is a not a far cry to apply the truths of such a discussion to the feeding of the human being. A bulletin of much use in the study of human nutrition is published by the Ohio Experiment Station on "The Specific Effects of Rations on the Development of Swine." While the knowledge of animal nutrition cannot be applied in all its force to human nutrition, in essence the principles are the same and a knowledge of one is a foundation for a knowledge of the other. If we learn that the feeding of animals is important in determining their efficiency, may we not suppose that the human animal is subject to the same natural law? To quote from the above-mentioned bulletin:

"The characters of growing animals are determined by the limitations imposed by *inheritance* and *food supply.*

"Deficiencies in the amount and kinds of nutriment available may affect not only the size — but within limits — the character of the growth of animals.

"We have been able to modify even the chemical composition of the brain by withholding certain phosphorus compounds in some particular condition required for brain development."

I have brought out these three things for this reason: At the present time throughout the country districts much thought and intelligent study are being applied to the question of animal feeding and development. The farmer is becoming keenly alive to the fact that scientific knowledge of both plant and animal feeding and breeding is necessary for developing a vigorous and lasting agriculture. The human being on the farm is not faring as well, for the same attention is not given to the production and development of the human being as to the development of farm crop and farm animal, and yet the need is surely much greater. If the ration that is fed to the animal is going to determine in part how the animal will develop, what about the ration of the growing child in determining what that future man or woman will become? Are the men, women and children of less actual importance to the farm than the animals and crops? Have they a lower market value? Considering this problem from the standpoint of dollars and cents, is the value of an efficient human being on the farm less than that of an efficient animal? We find that to produce better pork, grain, wheat, poultry and eggs is going to make the farm more profitable, and that to accomplish this we must have a fundamental knowledge of the sciences which underlie their production, breeding and feeding. In the case of the human being, this same thing is true. The production of better human beings on the farm is bound up in a careful consideration and application of these things, and if we are going to improve the human crop on the farm, we must begin to discuss as frankly and freely the questions of human breeding and feeding as we now discuss the questions of the breeding and feeding of animals.

After all, what is the farm without the intelligent farmer — the intelligent man, woman and child? The last five or ten years have seen a growing interest in this type of instruction and a growing in the demand for it. The time is now ripe for directly furthering human interests by instruction in human care and development.

At the present time the average farmer knows considerably more of the science of agriculture than the farm woman knows of the science of humaniculture — if we may call it that. With a little more instruction and a little more help in finding the way, the average farmer, with the knowledge that he has of animals and feeding, could be very easily stimulated to an interest in the human application of this knowledge. We ought to increase this type of instruction in our institutes if we are to serve the best interests of the country.

We are going to have better farmers, better farmers' wives and sons and daughters, and therefore better farms when we begin to take up carefully and completely the subject of human feeding and breeding; when we give as intelligent care and study to the bringing up of the babes as we now give to the calves.

THE VALUE OF PLAY IN THE MENTAL DIET

By Ida S. Harrington

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There was once a doctor who treated every patient who came to him for the same disease. As it was rather a common disease, a number of his patients got well, and the doctor achieved some fame. I am not a doctor, much less do I expect ever to become famous, but I should like a chance to prescribe for a malady from which many are suffering, whether they know it or not. I refer to a lack of play in the mental diet.

If the question is asked, "What has this malady to do with home economics?" I answer that in the first place, home economics is the science of efficient living, and, in the second place, home economics is the only means whereby our work can be so planned and carried out that we shall have time to play.

We always think of our children's needs before we think of our own; their need of play, therefore, is coming to be so generally recognized that nearly every periodical which we pick up has some allusion to play-grounds, proper direction of play, or the physical, mental and moral uplift resulting from corrective play. Much that is written on the subject of children's play takes it for granted that children will cease playing when they grow up. A recent grange paper said something like this: "The ball-ground is of more importance to the next generation and the farm industry of days to come than even farmers' institutes, valuable as these are."

Why is not the ball-ground important — valuable — to the present generation and the farm industry of to-day, as well as to those of to-morrow? Why should not the farm boy look up to his father for his skill in games, as much as for his skill in work?

What is there that so knits a man and his boy together as the recognition on the boy's part that his father is "a good sport?"

A recent number of the *Cornell Countryman* published an excellent article that contrasted the position of the "old man" on the farm, tolerantly looked upon as a "back number" just because his physical power is waning, with that of the successful head of a large city business. The latter, too, is spoken of as the "old man," but there is a world of difference in the meaning of the term in the two cases. The first old man looks and feels his years; he is literally the "old man;" the second is in the height of his power; the nickname in his case is merely another way of calling him the "boss."

The author referred to ascribes the difference between seventy years old in the country and seventy years young in the city to a difference in diet, and I agree with him. Physical diet, however, is not alone responsible; the old man in the country has long forgotten the element of play in his mental diet. And here comes in the pity of it; although every advantage is on the side of the rural home as a place for re-creation through play, yet the city dweller has at present more amusements to keep him young. This condition will cease to exist just as soon as the country people awake to their opportunities. They have it in their hands to make play what it should be, a general good time in which everyone participates and in which everyone is important. Miss Hill, who taught what is known as "natural dancing" at Wellesley College, used to say to her students, "What possible pleasure can you find in sitting in a cramped position in a badly ventilated hall, watching other people playing about on the stage? *Why don't you do your own playing?*" What she taught them consisted in listening to music with the idea of expressing through motions what the music meant to them. Anyone who has seen Miss Hill's classes demonstrate what she taught, on "Tree Day," for instance, must realize how incomplete life is without play, and how impossible it is really to play anywhere except outdoors.

The following question was asked at a grange meeting: "How may a mother best keep in social and mental touch with her growing boys and girls?" Surely the answer to that question is, "By knowing how to play with them." Many a mother, conscious of how little play she has had in her own life, plans in the goodness of her heart to make up her lack to her children, and forgets that drudging in order that *they* may play is not making for their happiness; if they always play without her, they will surely grow away from her. When a girl has been especially gay and happy and has giggled and "carried on" as girls will, there is sure to come a rebound to a serious and confidential mood, and the one to whom she will give her confidence is the person with whom she has dared to be foolish. That person ought to be her mother and will be, if mother and daughter are united in their play as well as in their work. Moreover, true hospitality consists, for one thing, in sharing each other's friends and whatever work is involved in the entertainment. It does not consist in the mother, or anyone else, doing so much of the work involved in entertaining that she is too tired to contribute her share to the general good time.

What happens when people have not learned how to play? If a teacher has in her class a child that stands apart and never enters into the games, she has a serious case, one that needs immediate attention. The child is in danger of growing into a girl who feels herself "misunderstood" because other people do not find her as interesting as she finds herself. The true play spirit forgets self in the absorption of the game, and such absorption in the game makes people forget to be self-conscious when asked to contribute to its success in any of the ways dreaded by shy people. It is just like crossing a room before a crowd of onlookers; you may be intent on the impression you are making, or you may be so intent on what you are going for that you forget that anyone is watching you.

The loneliest man I know, and one who would appear to have much to live for if he only knew how to live, is one of whom it is said, "He learned how to work under his superiors, he was successful in directing his subordinates, but he has never been taught how to play with his equals."

Let me repeat what I said before. The people in the country are those to develop the play spirit as it should be developed. Nature gives them such decorations for every festivity as no city decorator can ever imitate; every festival in the year suggests the country. Consider some of them in their order: Easter, May Day, Midsummer Day, Fourth of July, Harvest Home, Hallow

E'en, Thanksgiving, Christmas. What one of them may be rightly kept without the element of outdoors?

May I suggest a new field for collectors, something better than postage stamps, post-cards, china, or spoons? I mean the field of festival customs. If the families in a neighborhood agreed to collect festival customs from books, magazines or, best of all, from personal recollections of very old people, and if they made it a point to revive some of these customs regularly as the festivals to which they belonged came round, they would soon do away with some of the so-called amusements which young people flock to now-a-days, just because there is nothing better in the way of play and because they *must* play.

In some of the towns where the safe and sane Fourth was celebrated by having the public school children taught the charming old English folk songs and dances, the pupils were so pleased that after their exhibition was over they went back to the parks by themselves and had their folk songs and dances all over again. And that was a required school exercise!

The element of music is most important in the blessed work of re-creation. "Music washes from the soul the dust of the day's work." It does more than that; it helps the day's work step by step. Even if you cannot carry a tune, you can "sing inside of you," and working to music is much like marching to music. Besides, music recalls play time, that essential in the mental diet which makes one "play the game for all he is worth, no matter who beats."

HOME NURSING

By Dr. Lucia E. Heaton

Farmers' Institute Lecturer

Since the establishment of training schools for nurses and the extension of the hospital system to all our larger towns, there is a tendency to delegate the care of the sick to the trained nurse and the hospital. But many of our farms are too far from the hospital for the safe removal of patients, and in many families the employment of the trained nurse is impossible because of the expense, and so in rural communities, in the small village and on the farm, the sick are still cared for by the women of the family. It has always been the province of women to care for the sick and disabled, and by centuries of experience she has developed a natural aptitude for the task. Some woman in every neighborhood and in almost every family is competent for the care of all cases of illness, except the most serious ones.

The essential qualifications for a good nurse are health, intelligence, some knowledge of sick-room methods and the ability to follow instructions to the letter. Loyalty to the physician and confidence in his ability are also essential to good work.

There should be some room in every house which may be converted into a sick room on short notice. The one usually chosen is the mother's room, because it is convenient and because the children think of it as a haven of refuge in all trouble, but in every sickness we must face the possibility of a prolonged course and be ready in case it should prove to be an infectious or contagious disease. The guest room or parlor will be better, since they are more removed from the family life and usually of sufficient size. The sick room should have a southern or south-eastern exposure and at least two windows; it should be large enough to allow the patient's bed to stand well away from the wall and to accommodate a bed for the nurse also; it should be cheerful in its furnishings and properly heated and ventilated. An open fire furnishes both heat and ventilation and is the ideal, but a wood stove and open window meet every need. In stormy or windy weather it may be uncomfortable to open the windows sufficiently for good ventilation. In such cases, the windows should be screened with unbleached muslin, which may be tacked on the casing, and the window raised behind it, or it may be put on a frame and removed when not needed. In making a room ready for use as a sick room, the first thing to do is to remove all articles of furniture which are not needed. The bed should be the best the house affords, good springs and a hair mattress, if possible, but never a feather bed; and a double bed is better than a narrow one for home nursing. A good mattress cover is needed and a rubber sheet in serious cases. Heavy paper flour sacks with bottom and seams removed make good substitutes for the rubber sheet.

Make the bed carefully, using strong, new sheets and a draw sheet, pinning the mattress cover, sheet and draw sheet to the mattress with strong safety-pins. The covers should be of light weight and not warmer than needed for comfort. Put cotton or linen sheets next the patient; wool blankets are only suitable for rheumatism. The room should be supplied with certain conveniences which are not expensive, most of which can be found in every house. Select plenty of suitable cups, glasses, basins and spoons and keep them in an adjoining room, washing them immediately after use, if possible. Have a clock with second hand and a pencil and pad for recording the pulse and respiration; a thermometer for the room and a clinical thermometer, hot-water bag, absorbent cotton and wooden toothpicks, with plenty of towels and bed linen. If she is to do good work, the nurse must take thought for her own comfort. A clean wash dress, an apron of the same material or white, comfortable, noiseless shoes, with pins, safety-pins, needles and scissors, make a good outfit, and a warm gown for night work is indispensable, also a good bed and an easy chair.

The inexperienced nurse often asks, "What can I do while waiting for the doctor?" The most important thing is to be sure and do no harm, and it is safer in most cases to give no medicines unless it may be castor oil or a saline laxative. Always give a bath and put the patient to bed, which makes it easy for the doctor to make a thorough examination. In case of fever, open the windows, lighten the covers and apply cold cloths to the head. Plenty of cold water to drink can do no harm unless there is excessive vomiting. If the patient is chilly give hot drinks, not alcoholic, and induce perspiration by means of the hot-water bag or hot-water bottles, and in case of pain, use hot applications or a mustard paste. Do not give headache tablets or bromo-seltzer or soothing syrup or any other nostrum; these things are all either useless in controlling pain or capable of doing much harm. Give only light food if any. Think over the illness from the beginning, so that you may be able to give an intelligent history to the doctor.

After the physician's visit, the most important thing is to obey directions exactly. Note all symptoms and keep a record of them; make a note, also, of the time medicines and food are given and of any other thing which may be of importance, since in the anxious vigil of a long night it is easy to forget just when the last medicine was given and whether the patient slept one hour or two.

In mild cases it is generally wise to let the patient sit in a chair while the bed is being made and the clothing changed, but in serious cases the nurse must learn to change the bed and body linen, to turn the patient and make his toilet, without disturbing his comfort. This involves the use of the draw sheet. Fold a strong sheet crosswise, lay it across the bed with the upper edge at about the level of the shoulders, tuck both ends under the mattress smoothly and fasten them firmly to the mattress with safety-pins. Keep the patient on the side of the bed and turn him over to the other side frequently. This practice promotes both the comfort and safety of the patient. To turn the patient by the draw sheet, remove the pins from the end on which the patient lies, leaving the other end firmly fastened, turn the covers down over the foot of the bed and lift the loosened end of the draw sheet, using it as a lever. Turn the patient over in this way and he will lie on the fresh side of the bed with his face toward the edge. This is easy for the nurse and comfortable for the sick one. To change the bed linen, first fold a draw sheet and place it across the fresh sheet which is to be put under the patient, roll or fold this sheet and the draw sheet together lengthwise for about half their width, and when they are in readiness, roll the soiled sheets from the vacant side of the bed to the middle and put the fresh ones in their place. Turn the patient over the folds in the center of the bed on to the fresh sheets which have been made ready. Then it is easy to remove the soiled sheets and to smooth out the folds of the fresh ones and fasten them in place.

Changing the body linen is not difficult, except in case of very heavy and helpless patients. In such case, it is well to cut the nightgown open in the back; the neck can be fastened with tapes if desired. The toilet of the sick must not be neglected. The daily bath secures free action of the skin and makes the patient more comfortable. It should be given between blankets, with all clothing removed. The mouth and teeth should be cleaned often, as it not only makes for comfort but may prevent complications, including deafness and disturbances of the digestive system. The bed must be kept smooth and dry, lest pressure sores appear, and it must be so placed that the light will not injure the eyes of the patient. Absolute cleanliness in and about the sick room is essential and is the surest preventive of fever in obstetric cases. Visitors should seldom be allowed before convalescence is well established. In acute illness with sudden onset, it is often well to withhold all food for a short time. Give plenty of water and wait for appetite. A different course must be taken in protracted illness accompanied by fever; here the nurse must tempt the appetite, and the amount of nourishment taken is often the gauge of improvement.

Before the diagnosis is made, the nurse should not only exclude visitors from the sick room, but all the younger members of the family. This precaution will prevent the spread of contagious diseases. Most of these diseases can be conveyed to others before distinctive symptoms appear, and it is this fact which makes quarantine so often ineffective. We no longer believe that all children should have the milder diseases while young; measles kills more children than scarlet fever and should be quarantined with the same care. The responsibility of the nurse is not less if the case is infectious instead of contagious.

The home nurse cares for most cases of tuberculosis, and her vigilance alone can prevent the spread of the disease. These cases need not be isolated, but all sputum must be destroyed and all bedding disinfected before it is used by others. Dishes and spoons used by the tuberculous should be carefully washed and rinsed in boiling water. Sunshine and air are the best disinfectants, as well as the most reliable curative agents in these cases, and the nurse must secure abundant ventilation. In all but the coldest weather the patient should be in the open air. In typhoid fever the requirements are slightly different, because the disease is carried by the dejecta of the patient which are allowed to contaminate food or drink. All stools and other discharges must be covered with some disinfectant (chloride of lime is the best) and allowed to stand at least an hour before they are disposed of. They should not be put where they can possibly pollute a well or stream or where they can be reached by insects or animals. On the farm, the best way is to disinfect them first and then to bury them. In winter the disinfection must be even more careful, since the ground is frozen and cold does not kill the typhoid germ. The sick room must be carefully screened from flies, which frequently carry the germs of both typhoid and tuberculosis. The hands of the nurse are capable of carrying infection to herself and others. The only safe rule is never to carry the hands to the mouth while on duty, and to disinfect them before touching food or leaving the room. Careless or ignorant nursing contributes more than any other factor to the spread of typhoid fever in rural communities.

VEGETABLES AND THEIR USE

By Angeline Wood

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Of all classes of our food supplies, vegetables form the largest and the most inexpensive class. On the average table they are used too sparingly, and particularly is this true in the country home, where of all places vegetables should be found at their freshest and in greatest variety and abundance. There are those who advocate a strictly vegetable diet, but the best authorities have proved that the mixed diet is to be preferred; however, many people eat more meat than is needed and more than is good for them. If we would but cut down the amount of meat and increase the vegetable supply on our tables, we would lessen the cost and increase the wholesomeness of our meals.

Vegetables vary widely in composition and in nutritive value, but all are valuable for their mineral salts, for giving variety to the diet and for their bulk. A certain amount of bulk to the food is necessary to promote the proper activity of the digestive tract, and vegetables furnish this. Of the nutrients, protein is furnished in peas, beans, lentils, cereals and nuts,— dry peas and beans contain 20 to 25 per cent. protein; the carbohydrates occur chiefly in the tubers and roots, such as potatoes, beets and carrots, and in the cereals. Of the latter, only rice and corn are usually served as vegetables. Green vegetables, such as cabbage, celery, lettuce and spinach, are valuable for their mineral salts and for their refreshing qualities, but contain very little of the food nutrients.

Such vegetables as turnips, beets and carrots should grow rapidly, and for early use they should be small or medium sized. If they grow slowly and become too large, they will be tough and fibrous. When selecting them for the table, all green vegetables should be crisp and firm; if at all wilted, they should be freshened in cold water before using. All vegetables that are to be eaten raw should be thoroughly washed.

Vegetables should be cooked in boiling, salted water. For strong flavored ones, the best method is to cook them uncovered and as rapidly as possible in plenty of water, drain as soon as tender and do not allow them to over-cook. Mild flavored vegetables are best cooked more slowly, uncovered and in a small amount of water. For serving, the simple ways are best. Rightly cooked and delicately seasoned with salt, pepper and butter, and perhaps a little milk or white sauce, the flavor of the vegetable is retained, and it is more delicious than the elaborately prepared dish.

The farm home can have and ought to have the best and freshest of vegetables at small cost, but a good vegetable garden on the farm is the exception. The ordinary garden will have only a few early potatoes, cabbage, turnips, beets and perhaps one or two short rows of peas, when a greater variety could be grown with a succession of plantings and the table supplied with peas, beans and other green vegetables for several weeks, rather than for but a few days. The location of the garden is also important; if it is near the house, it will be much easier for the housewife to gather the fresh vegetables when wanted for use.

Following is a suggestive list of vegetables for the farm garden: Asparagus, beans, beets, brussels sprouts, cabbage, carrots, cauliflower, celery, corn, cucumbers, egg plant, endive, kale, kohl rabi, lettuce, onion, parsley, parsnips, peas, peppers, rhubard, salsify spinach, squash, tomatoes and turnips.

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A Fertile Valley.

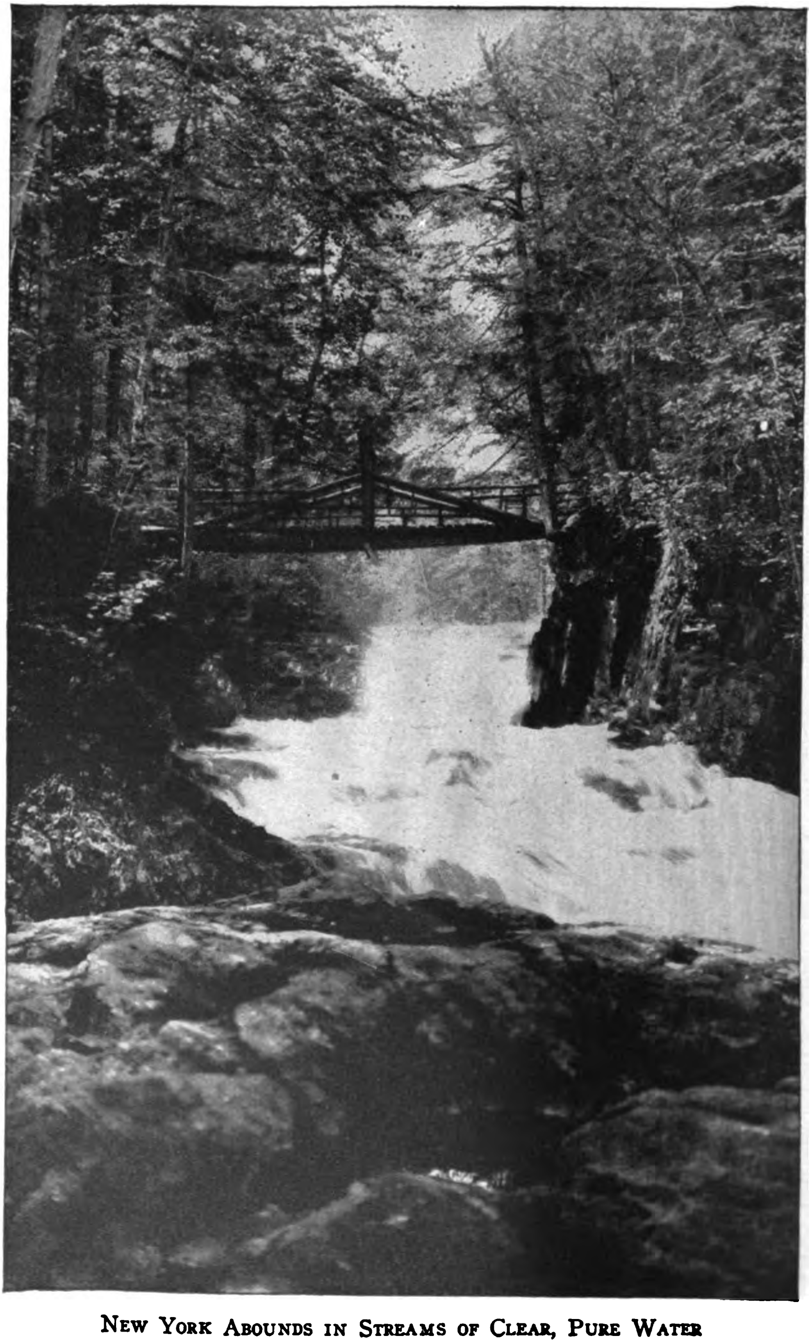
STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 38

Agricultural Advantages of New York



New York Abounds in Streams of Clear, Pure Water

AGRICULTURAL ADVANTAGES OF NEW YORK

FOREWORD

MANY misleading statements concerning the agricultural conditions in New York State have been circulated from time to time. It is the purpose of this bulletin to correct those erroneous ideas and give to the people of this State, as well as of other States, a view of the situation as it really exists.

In presenting the claims of New York to those who are seeking farm homes, we recognize that it is a new thing for an eastern State to claim superiority over her western sisters along agricultural lines. For years the opinion has prevailed that New York State is chiefly a great center of commercial activity and wealth. The west has looked upon this State principally from the standpoint of New York's ability to finance her great development schemes. The fact that New York is the leading State of the Union in the power of her commercial and industrial enterprises has largely overshadowed the truth that she is still and always will be the Empire State in the variety and special value of her agricultural products.

New York possesses in one section or another the chief agricultural attractions of other States, to which are added her unexcelled markets, her great transportation systems, her exceptional educational facilities and a State agricultural law protecting farmers against frauds of almost all kinds.

It has long been said that "distance lends enchantment;" there is, perhaps, no other explanation for the fact that clever men can come into our State and sell to our farmers for three hundred to five hundred dollars an acre land in the far west or the far south, without improvements, without neighbors, without schools, without churches, without markets, without those things that men most want and immediately set about to procure when they establish themselves in the lonely places. All these advantages are everywhere in New York, within easy reach of many farms that may be procured for from twenty-five to one hundred dollars an acre and which will produce as large crops as the land in the west, now covered by sage brush, or in the south, now covered by tangled weeds, and for sale at double the cost of the New York land.

Fruit Farm Overlooking Seneca Lake.

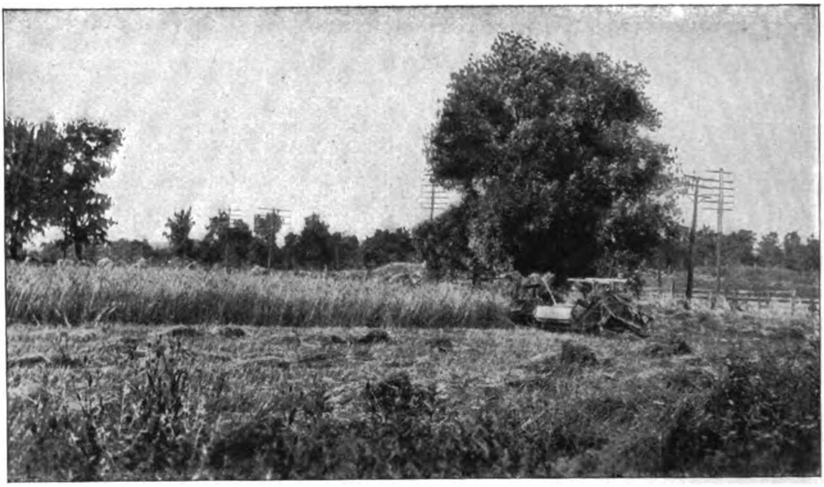
AGRICULTURAL NEW YORK

Area. Although there are more acres in many of the western States than in New York, as Dean Bailey has well said, "it is the size of an acre of land that controls in the end, and the value of produce per acre is greater in the eastern States than in the western States."

Climate. The climate of New York is generally healthful and invigorating. Blizzards, cyclones, destructive winds and devastating storms are scarcely known. The rainfall averages about thirty-six inches per annum.

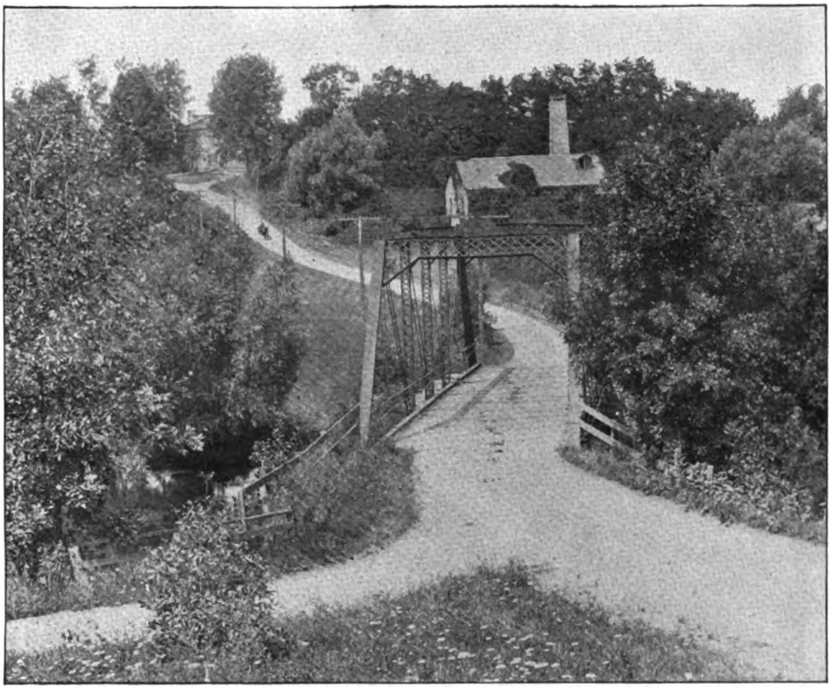
Topography. New York is noted for its peculiar topography, consisting of hills and valleys, mountains and plateaus, with the Atlantic Ocean and Long Island Sound at the south, two of the great lakes at the north and west, three important rivers and a score of inland lakes of considerable size and great beauty. This diversity of the surface features makes the State remarkable for its beautiful scenery. The slopes are of such a character that the country is naturally well drained. Clear, pure water is found in abundance throughout the State.

Typical Stretch of Country.



HARVEST SCENES.

Population. New York State surpasses all the other States of the Union in its population, which is over nine millions. Of this vast population, the number of people residing in cities and employed in industrial plants and on construction enterprises is out of all proportion to the number engaged in agriculture. Fifty-two per cent. of New York State's population reside within the limits of Greater New York. Seventy-eight per cent. of the population of the State live in cities of twenty-five thousand and over and only twenty-two per cent. live on farms, in villages and in cities with a population less than twenty-five thousand. Here is a great opportunity for the New York farmer, a market at his door that should inspire him with confidence and a determination to meet the demand with the best products that can be raised on a thoroughly cultivated soil.



COUNTRY ROAD IN WESTERN NEW YORK.

Farm Area and Value. The last census gave New York 215,597 farms. The average size of a farm is a little over

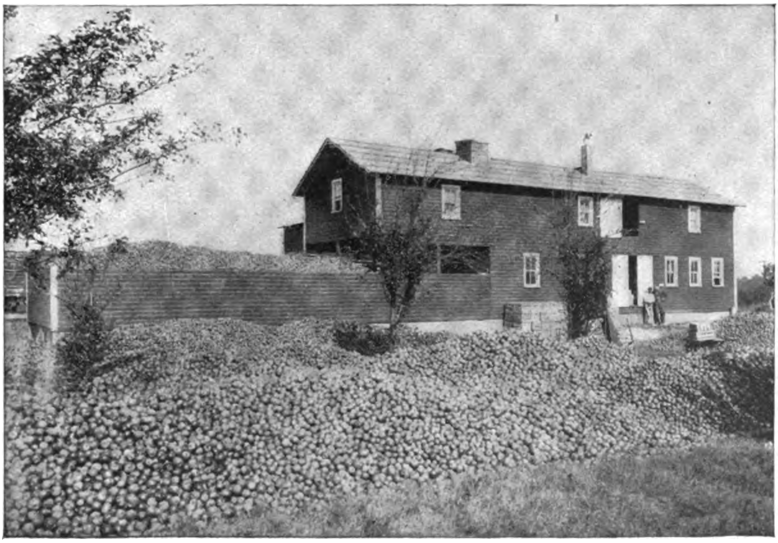
A Well-Laden Peach Branch.

Young Pear Orchard, Columbia County.

one hundred acres. This gives New York 22,030,367 acres of land now in farms. The total valuation, including buildings, fences and improvements, is given in the census of 1910 as $1,451,481,495, an increase in valuation since 1900 of 35.7 per cent.

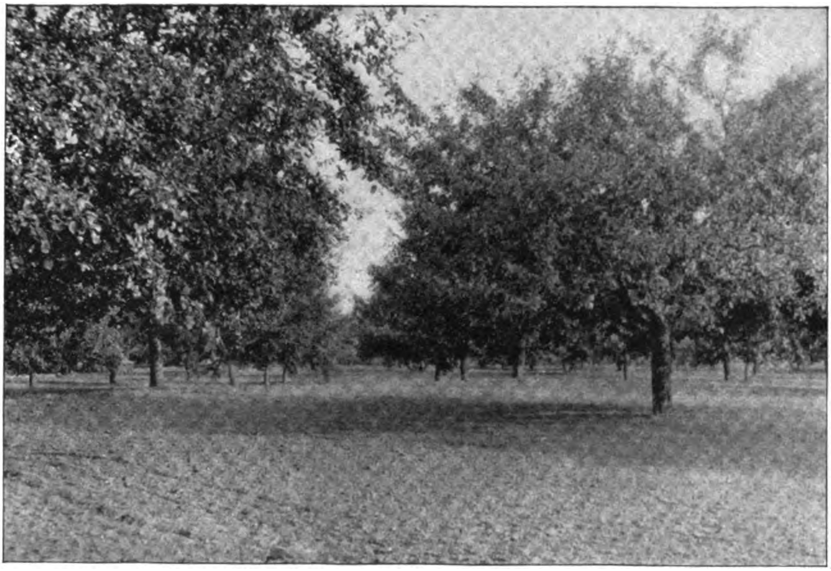
Markets. The fact that the State has long since passed her speculative or uncertain era of development should count for a great deal in the advantages New York offers to home-seekers. The centers of population are fixed with certainty. A man who locates a farm near a market to-day can confidently trust, not only in the permanency of his market, but in the certainty of its increasing demand for his products. Farms lying back on our mountain sides and among the hills, comparatively remote, are now in daily touch with cash markets for a fairly wide range of products. This is partly due to the annual influx of hundreds of thousands of city people into the hill, mountain, lake and river regions.

All over the State everything that is fresh from the dairy, garden, greenhouse, field, pasture, vineyard, orchard, poultry-yard and berry patch is sought for. So great is the demand for everything that can be produced on the farm that, in many



APPLES AT EVAPORATOR, NIAGARA COUNTY.

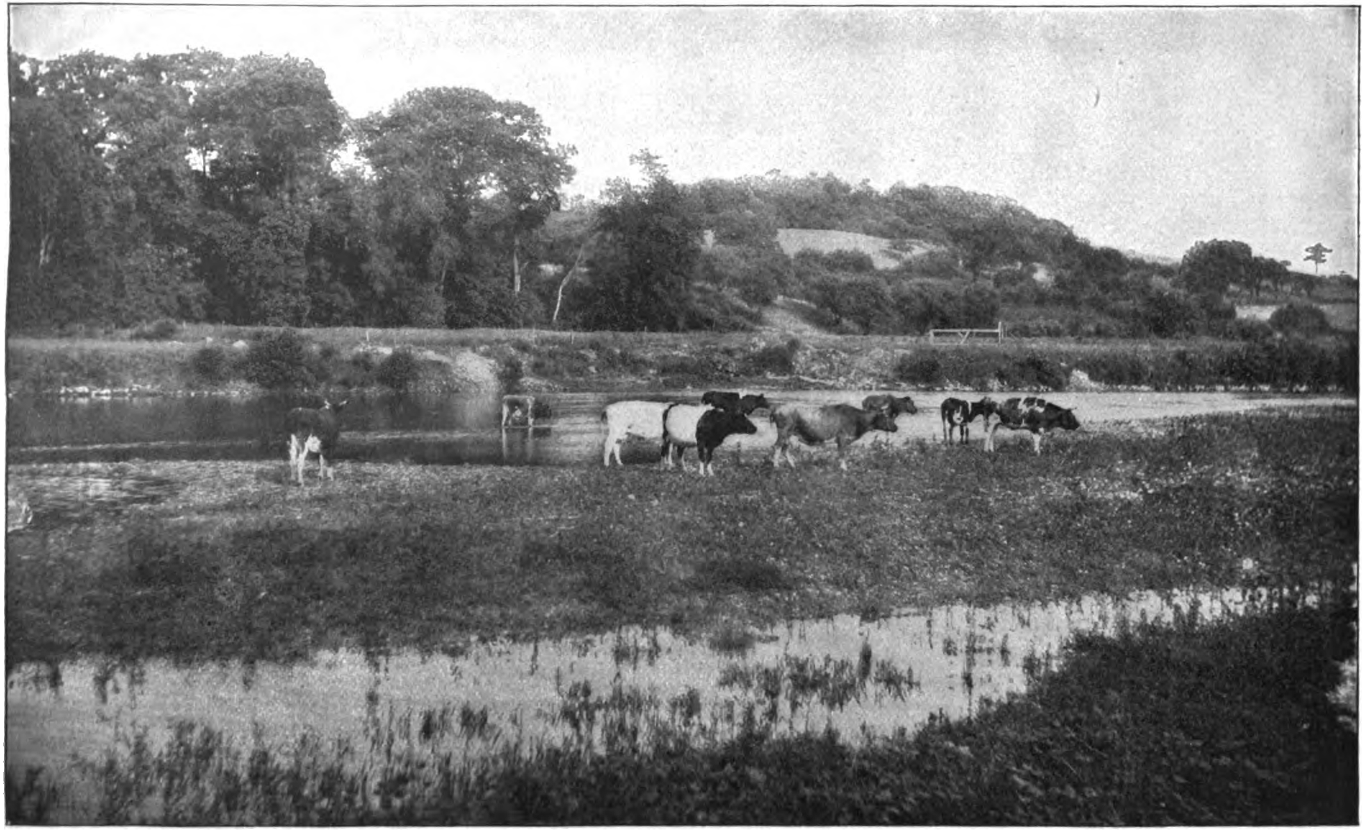
Strawberries are a Profitable Crop.



A WELL-KEPT APPLE ORCHARD.

cases, buyers are seeking the farmer, and produce is sold at the farm. Beside this demand, a large number of canning plants scattered throughout the State are demanding thousands of tons of peas, sweet corn, beans, tomatoes and fruits, while the apple region is well supplied with evaporating plants.

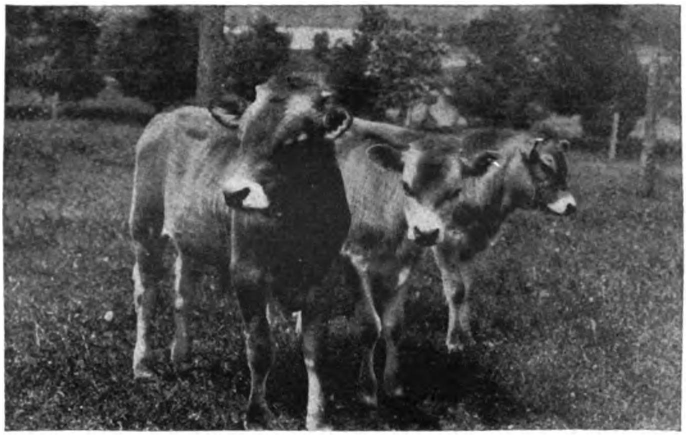
THERE IS MONEY IN GROWING GRAPES.



In the Dairy Region.

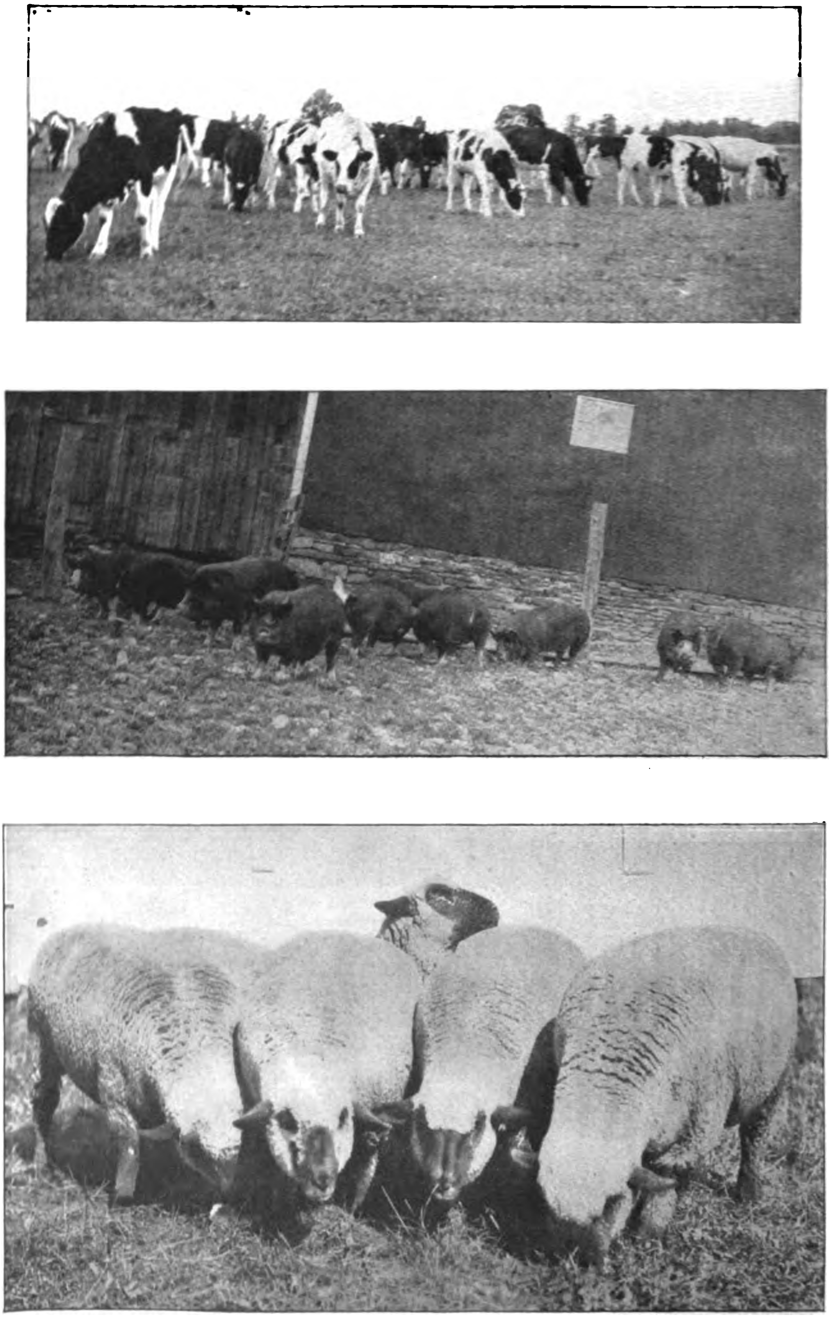
There appears no reason why New York farmers cannot be first in supplying this demand, because of short shipments and quick deliveries. Cold storage and refrigerating cars coming from a distance cannot deliver goods that will compete with those fresh with the dew and crisp with life, straight from the field of the New York farmer. New York City alone, with its approximately five million consumers and with its perpetual stream of tens of thousands of visitors from every part of the world, would take manyfold more farm products than are now produced in the State.

Transportation. The lines of transportation, trunk lines and branch lines of railroads, trolley lines, waterways and State roads thread the State like a network, while the Erie Canal, now being reconstructed, furnishes a means of extremely cheap transportation to the numerous cities and towns on its banks. It is difficult to find a farm that is not within a short driving or easy shipping distance of some important market. One-third the entire population of the United States is within one night's shipment by express and thirty-six hours by freight of the farms of the State.



NEW YORK STANDS FIRST IN MILK PRODUCTION.

Soils and Production. The soil of New York State is chiefly of glacial origin, which class of soil is noted the world over for its long-continued productiveness under fair treatment. Like all classes of soils the glacial soil may be injured by injudicious management, but it can be restored to prime condition at less



Well-Bred Stock.

expense and labor than can most soils. The prevailing types of soil in the State are loam and clay loam, with lighter soil in many of the valleys.

To some extent, the areas which are characterized by the production of certain crops or agricultural industries possess distinct types of soil and such divisions may be followed in describing the predominating soil types.

Great Lakes Area. South of Lake Ontario is a low plain of level land noted for the production of apples of rich flavor and good keeping quality. Pears are also grown, and peaches near the lake. The eastern portion produces enormous quantities of strawberries. The counties of Niagara, Orleans, Monroe and Wayne are in the center of this region, but the adjoining counties also participate in the production of fruit and contain much of the same soil. Much of the soil is loam which is admirably suited to the production of apples, pears, plums and cherries. Especially for color, flavor and keeping quality of apples, the loam is highly esteemed. The clay loam is well adapted to grass and small grain, and the sandy loam and sand to small fruit and vegetables. Owing to the heavy nature of the clay and its occasional need of drainage, a difficulty may be

GOOD TYPES OF THE WORK HORSE.

New York Farm Homes.

experienced in fitting the land early in the spring. This may be largely overcome by fall plowing, and altogether overcome by tile drainage.

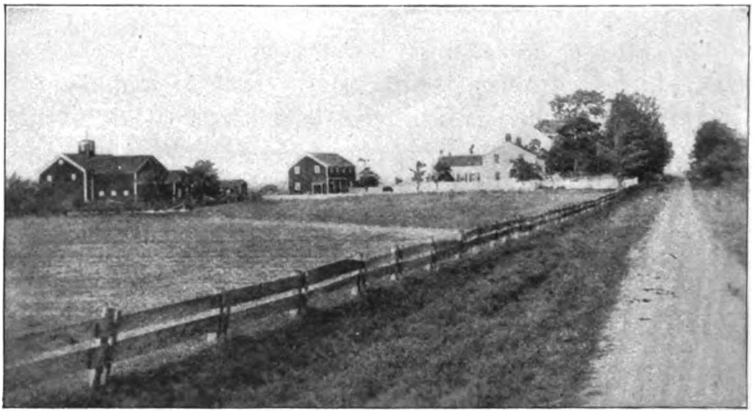
Great Plateau. South of the region just described and reaching to the southern border of the State is a moderately high plateau extending from the plain bordering Lake Erie to the Catskill Mountains. This plateau is deeply cut by valleys of rivers, creeks and of the finger lakes, which last beautiful bodies of water lie in valleys deeply eroded during glacial times.

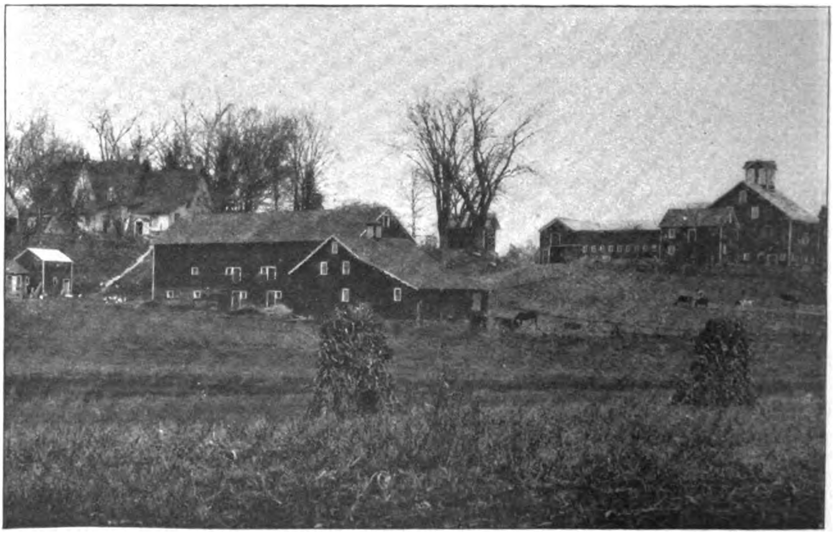
There are some steep hillsides where the plateau descends into these valleys, but back of these are great stretches of level or gently sloping land. The suitability of the hillsides to pasture grasses and of the more level soil to the production of hay makes the region a natural live-stock country. Dairying, general farming and, in the north, extensive bean growing and orcharding are the chief agricultural interests, while in the western part of the region and around Lakes Keuka, Seneca, Canandaigua and the hills overlooking Lake Erie grape growing is extensively conducted.

VEGETABLES GROWN IN NEW YORK.

Most of the soil is a loam which is adapted to the growth of all the ordinary crops of the temperate zone, but especially to potatoes, buckwheat, timothy and redtop. The heavier soil produces grapes and apples very successfully.

The soil of this region is usually well drained unless underlain by a heavy subsoil. Farm manure is the best fertilizer to apply to the soil and, as the region is naturally well adapted to the production of live stock, this should be available on every farm. These soils are also usually benefited by the application



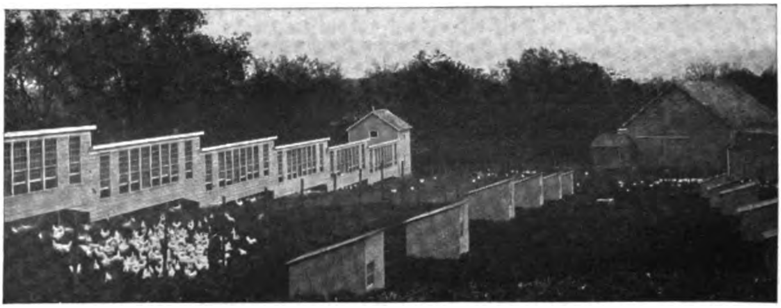


Typical Farm Buildings.

of lime. Not being heavy they may be worked early in the spring and crops are not backward.

Long Island. Long Island constitutes a distinct agricultural area. The soil is, in the main, sandy and certain sections are admirably adapted to the raising of vegetables, which occupation is an extensive one over much of the island. Potatoes are grown in great quantity. Melons, cucumbers, asparagus, in fact all the garden vegetables are grown in large quantities for the New York market.

The sandy character of this soil makes it in general well drained. Like all trucking soils, it is greatly benefited by generous applications of farm manure and commercial fertilizers, and these bring very profitable returns.

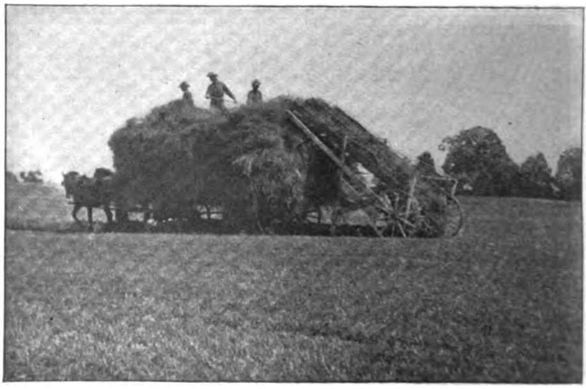


UP-TO-DATE POULTRY BUILDINGS.

Mohawk and Hudson Valleys. Along the Hudson and Mohawk valleys the soils vary greatly in different localities. Along the former river fruit raising is extensively conducted, as well as dairying in the neighborhood of New York City. The Mohawk Valley is noted as a good general farming section.

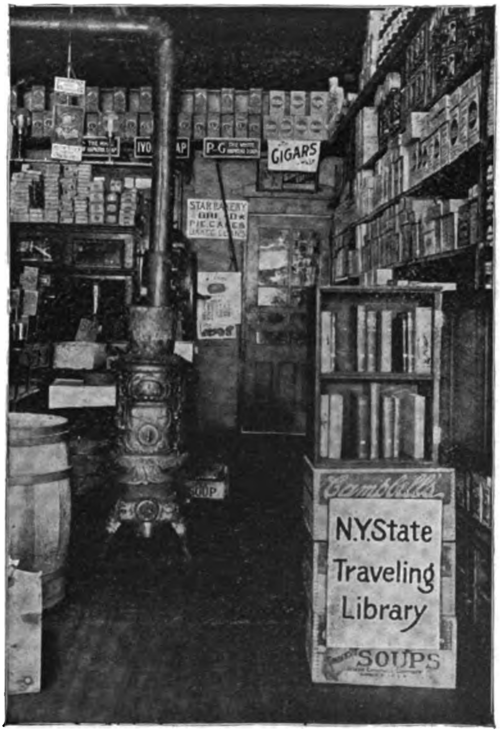
Adirondack and Catskill Mountains. Much of the Adirondack and Catskill Mountain region is not agricultural land, but in the valleys of these mountains is some very fertile soil. The Champlain Valley and the soil between the Adirondacks and the St. Lawrence River is of great fertility and produces large crops of hay and other general farm crops. It is largely a dairy section. Portions of the region require drainage. Clover yields well and the fertility of the soil is easily maintained.

Educational and Social Advantages. It is unnecessary to urge New York's claim as an educational State or to enlarge upon her social advantages. With ten thousand six hundred twenty rural school districts scattered throughout the State, no boy or girl need lack instruction or go far from the farm door to get it. The village or city situated only a short distance away, with its graded school, academy or college, will carry them as far along the path of education as they care to go when they have outgrown the district school. If a course in agriculture is desired, the most ample opportunities are afforded by free tuition in subordinate schools of agriculture and in the State Agricultural College at Cornell University, institutions of which the State is justly proud. The traveling libraries, sent out by the State Department of Education, take the best literature of the world directly to the farm home. If the farmer wishes the inspiration and advantage of discussion and of social association with his farm neighbors, he may have them in some one or more of the nine or ten hundred agricultural organizations in the State which exist for the sole purpose of advancing the farm social life and the farmer's knowledge and interest in agriculture.



OPPORTUNITIES IN NEW YORK

To-day there are a great number of good farms in New York lying unoccupied, untilled or poorly tilled, with comfortable buildings, fair fences and within a reasonable distance of good markets, that can be bought for twenty to fifty dollars an acre, with a very small first payment and the balance on long-time payments and at a low rate of interest. There are farms which can be bought for seven to fifteen dollars an acre, with buildings and fences of less value than the higher-priced farms just mentioned, which, under cultivation, will produce good crops and in a very few seasons of thorough tillage be worth much more than their cost. Men whose advanced age and inability to secure competent farm help renders them unable to till their land to advantage offer their farms at a price much below their agricultural value. There are higher-priced farms ranging from seventy-five to one hundred dollars an acre, first-class, well-cultivated dairy farms, with fine buildings and equipment, lying near prosperous towns



LETTUCE.

and cities, many having well-paying milk routes or established markets. Advanced age, poor health, death of owner, settlement of estate, etc. are reasons for these farms being on the market.

Another reason for the existence of these unoccupied farms is the rapid development of the west. The agricultural possibilities of the west have been extensively advertised in the east, and we have without protest permitted our ambitious young men to depart to that much-advertised section of the country, leaving some of our farms to fall into an uncultivated, tenantless condition. That the place of these men was not taken by the great number of immigrants coming to our shores every year was largely due to the same cause. The west, through attractive advertisements and favorable terms, induced these foreigners to settle there, whereas if they had known of the splendid possibilities existing in land from two to six hours' ride from where they landed, they would undoubtedly have selected it in preference to that so far away.

The phenomenal growth of business enterprises has fascinated the farm boys and won them by thousands away from the farm. Agriculture is now, however, settling down upon a business basis. The agricultural colleges are fitting men to take up the work of cultivating the soil in an intelligent manner and, in this way, the farmer's work is being placed on a plane with the other

GATHERING MUSKMELONS.

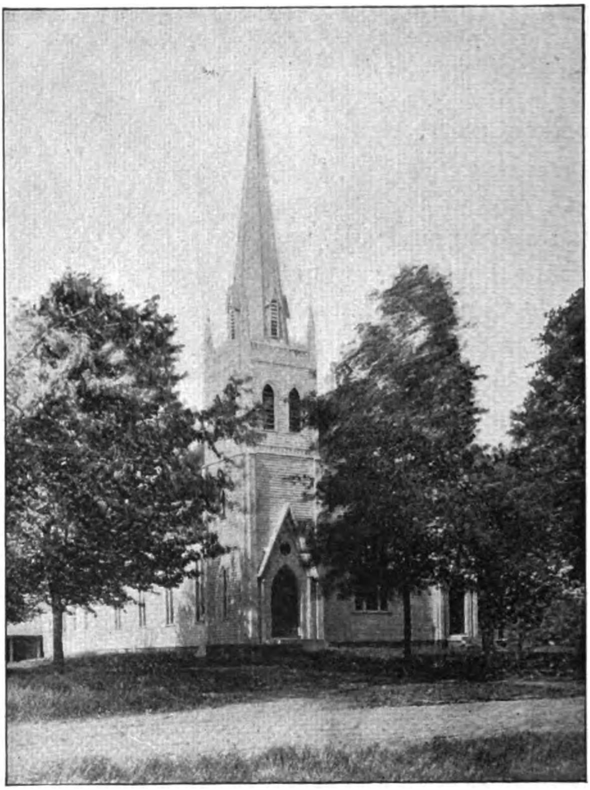
FIELD BEANS.

important professions. The lure of the city is to a great extent counteracted by the modern implements and labor-saving devices, which have served to do away with the oldtime drudgery on the farm. There is now no reason that the farm home should not be as attractive as the city home. Electricity is being used throughout large sections of the country. Telegraph and telephone lines and the rural free delivery mail service have banished the old farm isolation.

These unoccupied farms, with their uncultivated but fertile acres, constitute a reserve asset of almost untold wealth to the State. It is inevitable that, with the rapid growth in population of cities, towns and manufacturing centers, every acre of available land in the State will be compelled to contribute its full share of products to the demands that will be made by our own home markets. The wisdom of the men who take early advantage of the prevailing low prices of farm lands in New York State will be amply rewarded.

The existence of these cheap New York farms has been taken as proof that they have been abandoned because the land could no longer be profitably cultivated. The statement that land in New York is worn out is greatly exaggerated. Some of the methods of farming may be worn out, but our soil, when properly cared for, produces crop yields that compare most fav-

CORN FIELD.



COUNTRY CHURCH AND SCHOOLHOUSE IN WESTERN NEW YORK.

RURAL FREE DELIVERY.

orably with those of other States. New York stands first in the production of milk, hay, potatoes, buckwheat, vegetables, apples, nursery products, beans, flowers, hops, onions and farm forest products and second in honey, wax and grapes. The tobacco crop amounts to fourteen million pounds a year. Hops, sugar beets, meats (beef, veal, mutton, lamb, pork) and poultry products are raised as the farmer elects and at greater profit than in any other section of the country because of nearness to markets. Many farmers near New York City and the other large cities of the State are engaging most profitably in truck farming.

Each year since 1905 a list of farms for sale or to rent in New York has been prepared by the Department of Agriculture. Each farm is described as to location, size, soil, special adaptation to crops, timber, water, fences, buildings, price, terms, name and address of owner or agent. As a result of this work over eight million dollars has been expended in the purchase of the farms listed in the several bulletins. Hundreds of these cheap farms, ranging in price from five to twenty-five dollars an acre, have been bought. In not one instance has the owner failed to secure a satisfactory reward from a proper cultivation. Cases are on record where farms costing less than eight dollars an acre have produced crops bringing from sixty to one hundred dollars an acre. The latest edition of the farm bulletin may be obtained upon application to the Department of Agriculture, at Albany.

DUCKS BRING BIG PRICES IN NEW YORK.

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STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 39

The Inspection, Certification and Transportation of NURSERY STOCK In New York State, Other States and Canada

(Corrected August 1, 1912)

1912

Prepared by

GEORGE G. ATWOOD

Chief, Bureau of Horticulture and Nursery Inspection

INSPECTION, CERTIFICATION AND TRANSPORTATION OF NURSERY STOCK

INTRODUCTION

This bulletin gives a brief synopsis of the laws and regulations of the several States and Canada relative to the inspection, certification and transportation of nursery stock.

Special attention of transportation companies, importers, custom house brokers, dealers and nurserymen is called to sections 304 and 305 of the Agricultural Law and to the following orders of the Commissioner of Agriculture. No person in the State of New York should handle or ship nursery stock until he becomes familiar with the provisions of the law relative thereto.

ORDERS

ALBANY, N. Y., *August* 1, 1912.

To Whom It May Concern:

By virtue of authority conferred on me by section 305 of the Agricultural Law, I, Calvin J. Huson, Commissioner of Agriculture, hereby issue the following orders:

TO TRANSPORTATION COMPANIES AND THEIR AGENTS

All nursery stock shipped from any point in the State of New York must have attached to each car, box, bale or package a copy of a certificate of inspection issued by the State Department of Agriculture, signed by the Commissioner of Agriculture and valid to September 1, 1913.

All transportation companies bringing nursery stock into this State shall immediately notify the Commissioner of Agriculture of the fact that such stock is in their possession or is en route to some point within the State, and give name of consignor and consignee and the points of shipment and destination of each consignment, and shall also make such further report relative to shipments as the Commissioner of Agriculture may from time to time require.

(Sample forms of notices will be sent on application.)

TO IMPORTERS OF NURSERY STOCK AND CUSTOM HOUSE BROKERS

All custom house brokers, bringing into or causing to be brought into this State any nursery stock shall file with the Commissioner of Agriculture, on or before October first each year, the name of the person, firm, association or corporation engaged in or intending to engage in such business, together with the business address of such person, firm, association or corporation.

Custom house brokers importing or bringing nursery stock into the State shall immediately, upon receiving consignments, notify the Commissioner of Agriculture of the fact that such consignments are in their possession or en route to some point within the State and give the name and address of the consignor and consignee and the destination of each shipment and the name of the transportation company bringing such stock and the route over which it is brought, and shall also make such further report relative to shipments as the Commissioner of Agriculture may from time to time require.

(Blanks will be furnished for this purpose.)

TO DEALERS IN NURSERY STOCK

All dealers in nursery stock must, if they have no growing nursery stock in this State file with the Commissioner of Agriculture their name and address, together with a list of all persons, firms or corporations of whom they buy nursery stock. No stock shall be sold, shipped or delivered unless accompanied by a copy of a certificate signed by the Commissioner of Agriculture or his authorized representative, indicating freedom from insect pests and fungous diseases. When all such stock is collected an inspection will be made and proper certificates provided by this Department to permit shipping.

TO NURSERYMEN

All growing nursery stock in the State will be inspected annually or oftener if necessary; if found free from injurious insect or fungous pests there will be issued to the owner a certificate of inspection, which certificate will expire September 1, 1913.

Every car, box, bundle or package must have attached an exact copy (including date of issue and date of expiration) of said certificate before shipment or delivery.

All nursery stock found growing within one-half mile of areas infested with San José scale must be properly fumigated as required by the regulations of this Department before shipment or delivery.

No nursery stock received from points within the State of New York shall be sold or delivered unless it bears a valid certificate of inspection on arrival.

Any nursery stock brought into the State must remain packed and unopened until permission is given by the Commissioner of Agriculture or his duly authorized representative. To facilitate rapid inspection receivers of nursery stock should notify the Department office at Albany or an authorized inspector of the receipt or expected receipt of consignments, giving the name and address of consignor and dates.

No nursery stock shall be shipped or delivered unless there is positive evidence that it has been inspected and certified by authority of the Commissioner of Agriculture.

(Signed) CALVIN J. HUSON,
Commissioner of Agriculture.

September 1, 1912.

INFORMATION

The State is divided into districts and the nurseries are under the constant care of inspectors of the Department. During the shipping season it is the duty of the Department to cause an inspection of all nursery stock received from points outside the State. All trees infested with San José scale or other injurious insects, and all trees and plants infected with fungous diseases, crown gall or galls on the roots must be destroyed or returned to shippers.

The Commissioner of Agriculture exempts from fumigation all herbaceous plants, conifers, greenhouse plants, flowers and cuttings, but this does not refer to stock that may distribute injurious pests or disease. Certificates issued by this Department will be valid until September 1, 1913. No certificate will be granted on a final inspection made earlier than August 1, 1912, and the most important inspection work will be done after August 1 and continue throughout the year wherever it is found necessary.

Vineyardists who make a business of selling cuttings and small fruit growers who do no general nursery business will receive a special certificate of inspection. Transportation companies class cuttings as nursery stock and require copies of inspection certificates.

Duplicate certificates of inspection will be furnished by the Department for filing in the offices of the States requiring them, as follows:

Alabama, Florida, Georgia, Illinois, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Nórth Carolina, North Dakota, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Wisconsin and Wyoming.

To avoid delay and possible loss of stock, no nurseryman should ship to another State, without first having learned the requirements of that State.

The following is a brief summary of the laws and regulations of the several States and Canada, governing the inspection, certification and transportation of nursery stock.

For fuller information correspondents are referred to the officials who have charge of the work in the several States.

ALABAMA.—A signed copy of inspection certificate must be filed with the secretary of the Alabama State Board of Horticulture, Auburn, Ala. A tag must be attached to every package of nursery stock delivered in the State. Tags are furnished at cost prices: First one hundred, 65 cents, postpaid; one thousand, $2.20, sent collect by express. All scions and bud sticks must be properly fumigated. The following insects and fungous diseases are quarantined against: San José scale, new peach scale, woolly aphis, crown gall, black knot, peach yellows, peach and plum rosette, white fly, gypsy moth and brown-tail moth. Prof. P. F. Williams, State Horticulturist, Auburn, Ala.

ARIZONA.— The horticultural inspection and quarantine law provides for quarantine of nursery stock and may be enforced against States where there is suspected danger to the horticultural interests of the territory. All nursery stock shipped into Arizona from any other State shall be prominently labeled with a certificate of inspection signed by an authorized official of the State in which the stock was grown. Shipments found infested with pests shall be sent out of the territory or destroyed at owner's option. Each carload, box or package shall be legibly marked with the name and address of the consignor and consignee and name of the place where contents were grown. F. H. Rockwell, Chairman, Horticultural Commission, Phœnix, Ariz.

ARKANSAS.— Shipments of nursery stock into the State must be accompanied by a certificate of inspection and bear the name and address of the consignee and consignor; otherwise the transportation company must notify the consignor and not deliver the shipments until a certificate is furnished. Geo. G. Becker, Acting Entomologist and State Inspector, Fayetteville, Ark.

CALIFORNIA.—Shipments of nursery stock into California are held by the transportation companies until inspected by State quarantine guardians. All packages must be marked with the name and address of the shipper, name of the consignor and name of the place where the stock is grown. All nursery stock infested with pests not existing in California will be immediately sent out of the State or destroyed at the option of the owner and at his expense. Peach, apricot and almond trees coming from districts where yellows and rosette are known to exist shall be refused entry and shall be destroyed or returned to the shipper. Notices of shipment of nursery stock to California should be sent to the horticultural quarantine officer, Room 11, Ferry Building, San Francisco, Cal., and to the State quarantine guardians at the point of destination.

COLORADO.— The State entomologist has general supervision of the inspection of nurseries and orchards to prevent the introduction and spread of injurious insects and plant diseases. County horticultural inspectors in fruit-growing counties of the State are appointed by the county commissioners. All nursery stock coming into the State must bear certificates of inspection and fumigation and on arrival in counties that have inspectors is turned over to them and is released to consignee if it passes inspection. C. P. Gillette, State Entomologist, Fort Collins, Colo.

CONNECTICUT.—All nurseries are inspected annually. Certification and treatment of nursery stock are discretionary with the State entomologist. Nursery stock shipped into the State shall bear a statement that it has been thoroughly fumigated in addition to the certificate of inspection issued by a State or Government officer. Stock may be inspected and treated, however, after reaching its destination. Dr. W. E. Britton, State Entomologist, New Haven, Conn.

DELAWARE.— Shipments of nursery stock into the State must bear a certificate of inspection and also a certificate stating that the stock has been properly fumigated. All nursery stock not accompanied by proper certificates may be held by the transportation companies until it can be inspected. Wesley Webb, Secretary, State Board of Agriculture, Dover, Del.

FLORIDA.—All shipments into the State shall have attached to each package a certificate stating that the contents have been stripped of foliage and fumigated as per rules and regulations. All persons selling nursery stock without the State shall pay a fee of $5 per annum and register with the inspector of nursery stock, file a certificate of inspection and receive permission to sell nursery stock in the State. It is declared unlawful to knowingly sell or transport any infested or infected nursery stock in the State. Rules and regulations may be obtained by addressing E. W. Berger, Inspector of Nursery Stock, Gainesville, Fla.

GEORGIA.— Nurseries are inspected annually. A signed duplicate of inspection certificate, together with a statement by the nurserymen that all stock intended for Georgia will be fumigated in accordance with directions furnished them, must be filed in the office of the State entomologist. Official tags of the Georgia State Board of Entomology will be furnished by the State entomologist at the following price: One hundred tags, 60 cents, postpaid; 200 tags, 85 cents, postpaid; 300 tags, $1.10, postpaid; 500 tags, $1.35, sent by express collect; 1,000 tags, $2.00, sent by express collect. Each shipment of nursery stock into the State of Georgia must bear the official tag of the Georgia State Board of Entomology and also a duplicate certificate of inspection of the State from which the shipment is made. E. L. Worsham, State Entomologist, Atlanta, Ga.

IDAHO.— No person, firm or corporation shall import or sell nursery stock without first applying to the State Board of Horticultural Inspection and filing a bond in the sum of $5,000 and securing license upon payment of $10. Shipments into the State should bear a copy of an official certificate of fumigation emanating from the place where the stock was grown. All shipments into the State must bear a label showing the name of the shipper, the locality where grown and variety of nursery stock. All nursery stock, fruit trees or horticultural plants sold or delivered by principal or agents shall be true to name and variety as represented. All nursery stock shipped into this State, whether bearing certificate of inspection or not, must be inspected again upon its arrival, the consignee paying for such inspection. Every nursery firm doing business in this State must pay $1 additional for each agent who represents them. J. U. McPherson, State Horticultural Inspector, Boise, Idaho.

ILLINOIS.— State nurseries are inspected and certified not later than October 1. An inspection certificate shall be valid for one year from date of inspection. The State entomologist is authorized to revoke a certificate if he finds it is being used in violation of the law. He is also required to furnish all Illinois nurserymen with a list of State and Government inspectors whose certificates may be received as equally valid as his own, and the nurseryman receiving stock under such certificates is authorized to substitute for them the Illinois certificate of inspection. Each dealer in nursery stock who has no nursery of his own and each agent for a nursery located outside of Illinois is required to furnish to the State entomologist annually a sworn statement, showing that the stock in which he deals has been duly inspected and to submit for approval a copy of the certificate of inspection. Nursery stock shipped into the State must bear a certificate of inspection attached to each car, box, bale, bundle or package. Dr. S. A. Forbes, State Entomologist; P. A. Glenn, Chief Horticultural Inspector, Urbana, Ill.

INDIANA.— All nurseries are inspected between June 1 and October 1 and at such other times as the head of the inspection department may consider advisable. Stock sent into or within the State must be plainly labeled with the name of the consignor and the consignee and must bear a certificate signed by a State or Government official showing that the enclosed stock has been inspected and found free from injurious insects and plant diseases. All foreign-grown stock must be inspected upon arrival at its destination in Indiana. C. H. Baldwin, State Entomologist, Indianapolis, Ind.

IOWA.— State nurseries are inspected at owner's request or if supposed to be infested with dangerously injurious insects or plant disease, and nurserymen are prohibited from selling or shipping without inspection. Shipments into the State must be accompanied by a certificate of apparent freedom from injurious insects or plant diseases. A copy of inspection certificate must be filed with and approved by the State entomologist. Prof. H. E. Summers, State Entomologist, Ames, Ia.

KANSAS.— Nurseries are inspected annually between June 15 and November 1. Certificates are valid until the first day of the following June. No nursery stock shall be brought into the State nor offered for sale within the State without having been properly inspected as shown by an accompanying certificate. State Entomological Commission, Topeka, Kan. Prof. T. J. Headlee, Entomologist, Manhattan, Kan. Prof. S. J. Hunter, Entomologist, Lawrence, Kan.

KENTUCKY.— Nurseries are inspected annually. Every package of nursery stock shipped into the State must have a copy of a certificate of inspection attached and bear on the label a list of the contents. Duplicate certificates of inspection may be filed with the State entomologist. Prof. H. Garman, State Entomologist, Lexington, Ky.

LOUISIANA.— Nursery inspection is under the control of the State Board of Agriculture and Immigration. The entomologist of the Experiment Station will have charge of the work, so all communications concerning nursery inspection should be addressed to him.

The regulations of the Board require every box, bundle, bale or package of nursery stock shipped into the State to be plainly labeled with a copy of a valid and unexpired certificate of inspection, and nurserymen shipping stock into this State must file a copy of their certificate with the Board. J. B. Garrett, Entomologist, State Board of Agriculture and Immigration, Baton Rouge, La.

MAINE.— Nurseries within the State are inspected annually. All nursery stock shipped into the State shall bear on each box or package a certificate that the contents have been inspected. The State horticulturist has power to inspect all stock shipped into the State at point of destination, whether under certificate or not, and if found infested with any injurious insect or plant disease he shall cause it to be destroyed or returned to the consignor. Agents or other parties, excepting growers who wish to sell nursery stock, shall make application for an agent's license and shall file with the State horticulturist the names and addresses of parties from whom they purchase stock. Such application shall be accompanied by a fee of $10. A. K. Gardner, State Horticulturist, Augusta, Me.

MARYLAND.— Nurseries are inspected at least once in six months. All nursery stock subject to attack of insect pests must be fumigated. Shipments into the State must be labeled with the name of consignor and consignee and each package bear a certificate of inspection. Duplicate certificates should be filed with the State entomologist. Prof. T. B. Symons, State Entomologist, Prof. J. B. S. Norton, State Pathologist, College Park, Md.

MASSACHUSETTS.— Nurseries in the State are inspected annually. Agents or other persons, excepting growers who desire to sell nursery stock in the State, shall make application to and receive from the State Nursery Inspector an agent's license, and shall file with the State Nursery Inspector names and addresses of all persons or nurseries from whom they purchase stock. It shall be unlawful for any person, firm or corporation to sell, deliver or ship within the State any nursery stock unless such person, firm or corporation holds a grower's certificate or an agent's license, and a copy of such certificate or license must accompany each car, box or package delivered or shipped. Every person outside of the State desiring to ship nursery stock into the State shall file a copy of his certificate of inspection and purchase official tags from the State nursery inspector at cost. A copy of the official tag shall be attached to each car, box or package. The State nursery inspector has power to inspect all shipments coming into the State at point of destination and, if infested or infected, may cause it to be returned to consignor or destroyed. (A new law goes in effect Dec. 1, 1912.) Dr. H. T. Fernald, State Nursery Inspector, Amherst, Mass.

MICHIGAN.— Nurseries are subject to inspection; infested trees must be destroyed and the remainder of the stock within a half mile must be fumigated. Shipments into the State must bear on every package, plainly labeled, the name of the consignor and consignee, statement of contents and a certificate showing that the contents have been inspected by a State or Government officer, and if of species subject to the attack of San José scale must be fumigated with hydrocyanic acid gas. Certificates of fumigation must also be attached, together with a certificate of inspection. This applies to individual orders when several are contained in the same shipment. All nurserymen, whether residents of Michigan or other States, who wish to grow or sell stock within the State must apply to the State inspector of nurseries on or before August 1 of each year for a license, for which the fee is $5.00. A bond for $1,000 must also be filed. Certificates of inspection must be filed with the State inspector of nurseries before any stock is shipped into the State. Prof. L. R. Taft, State Inspector of Nurseries, East Lansing, Mich.

MINNESOTA.— There is an annual inspection (not compulsory) of all nurseries from which stock is shipped out of the State. Shipments into the State must be accompanied by a certificate of inspection. Carrying companies accepting packages of nursery stock from without the State without a certificate of inspection are liable. Prof. F. L. Washburn, State Entomologist, St. Anthony Park, Minn.

MISSISSIPPI.— Every nursery in the State must be inspected before November 1 of each year, and every bundle, bale or package of stock sold or transported must be accompanied by a copy of the certificate of inspection attached in a conspicuous place. Every person or firm from other States wishing to ship nursery stock into Mississippi must file with the entomologist a copy of their certificate which shall state that the nursery is properly equipped for fumigating all nursery stock. A copy of the certificate shall be attached to every bundle, bale or package of nursery stock delivered within the State. Every nurseryman must state that all nursery stock shipped into this State will be fumigated with hydrocyanic acid gas. R. W. Harned, Entomologist, Agricultural College, Miss.

MISSOURI.— Nurseries are inspected annually. Every package of nursery stock shipped into the State shall be plainly labeled on the outside with the name and address of the consignor, the name and address of the consignee, the contents and a certificate showing that the contents have been inspected by a State Experiment Station entomologist of the State from which the shipment was made, and that the nursery stock is free from San José scale, peach yellows, rosette or other dangerously injurious insects or diseases. Transportation companies are forbidden to deliver nursery stock unless accompanied by a certificate. Leonard Haseman, Entomologist, University of Missouri, Columbia, Mo.

MONTANA.— All stock brought into the State must be unpacked, inspected and fumigated if necessary at one of the designated quarantine stations, viz.: Glendive, Miles City, Huntley, Billings, Big Timber, Livingston, Bozeman, Lewistown, Helena, Great Falls, Dillon, Anaconda, Missoula, Victor, Como, Darby, Plains, Mondak, Glasgow, Havre, Kalispell, Whitefish, Eureka and Troy. Nursery stock may be inspected and fumigated at other points of delivery on payment of all costs. To sell or deliver nursery stock it is necessary to first obtain a license by paying a fee of $25 and by filing with the State horticulturist a bond in the sum of $1,000 annually. Notice of shipment, including an invoice of stock, must be sent to M. L. Dean, Montana State Board of Horticulture, Missoula, Mont.

NEBRASKA.— No inspection law, but a certificate of inspection should accompany shipments into the State. Nurseries are inspected by Prof. Lawrence Bruner or Prof. Myron H. Swenk, Assistant State Entomologist, University of Nebraska, Lincoln, Neb.

NEVADA.— Nursery stock shipped from other States shall bear on the outside of each car, bale or package a label giving the names of the consignor and consignee, together with a copy of an inspection certificate of recent date. Such certificate of inspection must bear the signature of a qualified person in authority in the State in which such nursery stock was grown. No transportation company shall deliver any nursery stock lacking such official certificate of inspection. J. E. Stubbs, President, State University, Reno, Nev.

NEW HAMPSHIRE.— Nurseries are inspected at least once each year. Shipments into the State must be accompanied by a certificate of inspection or, in lieu thereof, an affidavit showing that the stock has been fumigated with hydrocyanic acid gas, using not less than 2/10 of 1 gram of cyanide of potassium per cubic foot of space, in an air-tight compartment for not less than 40 minutes. A copy of the certificate of inspection or a copy of the affidavit must be attached to each car, box or package shipped into the State. Hon. N. J. Bachelder, Secretary, State Board of Agriculture, Concord, N. H.; Charles W. Stone, State Nursery Inspector, Durham, N. H.

NEW JERSEY.— The law requires the inspection of all nurseries at least once in each year. Shipments into the State must be accompanied by a certificate of inspection, or copy thereof, attached to each car or parcel, together with a statement from the shipper that the stock therein is a part of the stock inspected and whether such stock has been fumigated with hydrocyanic acid gas or not. It shall be the duty of all carriers to refuse for transportation within the State all stock not accompanied by a certificate of inspection.

If stock comes into the State without a certificate it may be detained for examination, wherever found, by the State Entomologist, and if found to be infested with any insects, injurious or liable to become so, will be destroyed. State Entomologist, New Brunswick, N. J.

NEW MEXICO.— No law relative to transportation of nursery stock. The Territorial Legislature of 1903 provided for county boards of horticultural commissioners which were given authority to control orchard pests. Prof. Fabian Garcia, Horticulturist, Agricultural Experiment Station, State College, N. M.

NEW YORK.— See Pages 1475, 1476 and 1477.

NORTH CAROLINA.— Every shipment of nursery stock into this State must be accompanied by a valid copy of a certificate of inspection. Every person, firm or corporation desiring to ship nursery stock into this State must file a copy of their certificate with the entomologist. It will be of advantage to the nurserymen if they attach a guarantee of fumigation to the shipment. A copy of regulations will be sent on application. Franklin Sherman, Jr., State Department of Agriculture, Raleigh, N. C.

NORTH DAKOTA.— The director of the Experiment Station is authorized to cause inspection and prescribe treatment of diseased nursery stock. Shipments into the State must bear a certificate of inspection. Every person who employs agents or salesmen or who solicits for the sale of nursery stock must obtain a license upon the payment of $10 and upon filing a certificate of inspection and a $500 bond. Said license will permit holder to do business in the State for one year. Director North Dakota Experiment Station, Agricultural College, N. D.

OHIO.—Shipments of nursery stock entering the State must bear the name of the consignor and consignee and be accompanied by an official certificate of inspection or fumigation. Agents are required to pay a license fee of $1 and dealers a license fee of $5, also to file sworn statements that the stock which they sell or deliver has been officially inspected and was received by them accompanied with a valid certificate of inspection or fumigation. N. E. Shaw, Chief Inspector, Ohio Department of Agriculture, Columbus, O.

OKLAHOMA.— Nurseries are inspected annually. The owners of nursery stock who desire to ship into the State of Oklahoma are required to make application for a permit. This permit is issued by the Board of Agriculture upon the filing of a duplicate certificate of inspection or report of inspection from the State inspector who examined the stock. The application must be accompanied by a remittance of $5. All shipments into the State must be accompanied by a tag on which is printed a copy of this permit. All agents canvassing for nurseries located outside the State are required to carry a duplicate of the permit of their principal, which duplicate is issued upon payment of $1. Price of tags given on application. Benj. Hennessy, Secretary, State Board of Agriculture, Oklahoma City, Okla.

OREGON.— The State Board of Horticulture has charge of inspection within the State. All nursery stock brought into the

State must be inspected before delivery to consignee. If found infected or infested, nursery stock must be disinfected, returned to consignor or destroyed. Peach pits, peach trees and scions and other trees on peach roots grown in or coming from districts where peach yellows, peach rosette and little peach exist and all trees affected with crown gall are prohibited entry. All nursery stock offered for sale within the State must be disinfected or treated before shipment by the use of hydrocyanic acid gas or by dipping in the standard lime-sulphur solution of winter strength of spraying. H. M. Williamson, Secretary, State Board of Horticulture, Portland, Ore.

PENNSYLVANIA.— Nurseries must be inspected at least once a year, and no nurseryman, agent, dealer or broker can legally sell or ship stock without a certificate of inspection. Certificates of fumigation are required to accompany shipments from other States, and the word "fumigated" printed or stencilled on or accompanying the certificate of inspection will not be accepted unless it is apparent that such word is a part of the certificate granted by a State inspection officer.

Nurserymen from other States are required to file affidavits that all nursery stock of kinds subject to infestation by San José scale will be properly fumigated before shipment into the State. Blanks furnished upon application. Dealers in nursery stock are granted certificates upon application and the filing of a statement that they will buy nursery stock only from nurserymen or growers holding valid certificates of inspection.

Transportation companies are required to reject all stock entering the State unless certificates of inspection and fumigation are attached. Prof. H. A. Surface, Economic Zoologist; Enos B. Engle, Chief Nursery Inspector, Harrisburg, Pa.

RHODE ISLAND.— The State Board of Agriculture appoints a State nursery inspector whose duties shall be to inspect nurseries and grant an annual certificate. Owners of nurseries who shall fumigate all stock sold by them may make affidavit to the fact and attach a copy to each package shipped in lieu of a certificate of inspection. All nursery stock shipped into the State shall bear on each package a certificate that the contents have been inspected by an authorized inspecting officer. In case nursery stock is brought into the State without such a certificate the consignee shall return it to the consignor, provided, however, that any package or box bearing a certificate of fumigation which meets the requirements may be accepted as though bearing a certificate of inspection. A. E. Stene, State Nursery Inspector, Kingston, R. I.

SOUTH CAROLINA.— Stock coming from other States, provinces or foreign countries and consigned to points within this State must have attached to every bundle or package an interstate tag or permit issued by the South Carolina Crop Pest Commission. This interstate tag or permit can be issued only after the certificate of inspection of the State, country or province where shipment originated has been approved by the South Carolina State Crop Pest Commission and filed in the office of the entomologist or pathologist of the said commission. It is further required that the fumigation certificate of the South Carolina State Crop Pest Commission is properly filled out and filed in the office of the entomologist or pathologist of the commission before the interstate tag or permit can be issued, unless the official inspection certificate includes a statement that the nursery is properly equipped for fumigating. A. F. Conradi, State Entomologist, Clemson College, S. C.

SOUTH DAKOTA.— All nursery stock shipped into the State must be accompanied by a certificate of inspection issued by the State entomologist of the State from which it was shipped. Any person, firm or corporation owning a nursery which sells stock to be delivered in this State must certify where the stock was grown and attach this statement to all shipments. Prof. H. C. Severin, State College of Agriculture, Brookings, S. D.

TENNESSEE.— Nurseries are inspected annually or oftener if necessary. Each and every individual, firm or corporation residing in other States dealing in or handling nursery stock before shipping into the State shall register his name, firm or corporation.

Any person, firm or corporation without the State, desiring to do business within the State, shall file with the State entomologist and plant pathologist a copy of his certificate of inspection issued and signed by proper official of his State, as well as an agreement to fumigate properly all stock shipped into the State. Every shipment must be accompanied by a copy of said certificate of inspection and a fumigation tag. Every individual sale or bill of trees shall bear a copy of certificate. Failure to comply with the requirements subject stock to confiscation. G. M. Bentley, State Entomologist and Plant Pathologist, Knoxville, Tenn.

TEXAS.— Nurseries and greenhouses are inspected annually. All shipments of nursery stock originating outside the State must bear shipping tags showing copy of certificate of inspection from the State inspector of the State in which the shipment originates, but in addition thereto they must have a tag attached showing copy of permit from Texas. No nursery stock shall be shipped into the State without first filing with the commissioner of agriculture a certified copy of a certificate of inspection from the State inspector of the State in which the shipment originates. A fee of $5 is required for issuance of permit to ship into the State. Agents or dealers operating in Texas for nurserymen outside of the State must procure proper agents' credentials from their nurseries, on an approved form. H. Dixon, Chief Inspector, Houston, Tex.

UTAH.— No persons shall engage in the business of selling or importing nursery stock without having first obtained a license to do business in the State. Any person may obtain a license from the State Horticultural Commission upon the payment of a fee of $2.50 annually and by filing with the State Horticultural Commission a bond in the sum of $500. Each salesman or agent must hold a certificate giving his name and the name and address of the persons he represents, together with the license number of his principal. A copy of the certificate of inspection must be attached to each shipment. All nursery stock will be quarantined on arrival and, if deemed necessary, disinfected or destroyed at the cost of the owner. J. Edward Taylor, State Horticultural Inspector, Salt Lake City, Utah.

VERMONT.— Nurseries are inspected annually. Nursery stock shipped into the State shall be accompanied by a certificate of inspection and the name and post-office address of the consignor and consignee. M. B. Cummings, State Nursery Inspector, Burlington, Vt.

VIRGINIA.— Before selling nursery stock, it is necessary to procure from the auditor of public accounts, Richmond, Virginia, a certificate of registration for which the fee is $20 for principals, duplicates for agents' use free. Send certified check or draft for $20 drawn or endorsed payable to the Treasurer of Virginia. (Personal checks will not be accepted.) Duplicate of certificate of nursery inspection must be filed with the State entomologist, who will furnish tags at cost, and one tag must be attached to each package of stock to be sold in the State. W. J. Price, Acting State Entomologist, Blacksburg, Va.

WASHINGTON.— No person, firm or corporation shall engage or continue in the business of selling as agent, solicitor or otherwise within the State or importing nursery stock without first having obtained a license. Application therefor must be made to the commissioner of horticulture, accompanied by a satisfactory bond of $1,000; each bond must be renewed annually. Such bond shall be conditioned that the principal or his agents will obey the provisions of the law and that said principal will pay the cost of disinfection or destruction of all infested nursery stock and fruit sent into the State by said principal or his agents. The license fee for nurserymen and tree dealers shall be $5 and for agents or salesmen $1. All licenses expire one year from date of issue unless renewed upon the same terms originally provided for. Every person licensed to do business in the State must notify the commissioner of horticulture of his intention to ship nursery stock, giving the names and addresses of the persons, firms or corporations to whom shipments are made. A copy of such notice shall also be sent to the horticultural inspector of the district in which the point of destination is located. For full information address Hon. F. A. Huntley, Commissioner of Horticulture, Tacoma, Wash.

WEST VIRGINIA.— Nurseries are inspected annually. Certificates shall be void after September 15 of year following the date. No person shall deliver to purchasers any nursery stock consigned into this State from points without unless they have at least ten days before the time of delivery given notice in writing to the director of the Experiment Station of the number of trees in such consignment, the place from whence said stock was shipped and the destination of the same. No person growing or having in his possession with intent to sell nursery stock shall deliver the same before fumigating it. Every package of nursery stock shipped into the State shall be plainly labeled with the names of the consignor and consignee and a certificate of inspection showing that the contents have been properly fumigated. Nurserymen who desire to employ traveling salesmen in the State should secure from the Secretary of State, Charleston, W. Va., information relative to license fees. E. Dwight Sanderson, Director, Agricultural Experiment Station, Morgantown, W. Va.

WISCONSIN.— All persons, firms or corporations shipping nursery stock into the State are required to file a duplicate certificate of inspection and secure a State license at the cost of $5. Each shipment must bear certificate tags which shall be attached to each package, box or carload lot. Transportation companies are forbidden to deliver nursery stock unless accompanied by valid certificate tags. All agents selling nursery stock within the State must be supplied with an agent's duplicate license at the cost of $1 which shall bear the same number and date as that of the principal. Wilful misrepresentation of quality or variety of stock offered for sale shall constitute a punishable misdemeanor. Professor J. G. Sanders, Entomologist and Chief Nursery Inspector, College of Agriculture, Madison, Wis.

WYOMING.—Any person or firm wishing to do business in this State must first obtain a license. Licenses are issued on application for a period terminating on July 1 of the next succeeding inspection year (approximately two years). All applications must be accompanied by the license fee of $25, a bond in the sum of $500, conditioned that the principal will faithfully obey the law of the State, and by a certified certificate of inspection from an authorized inspector in the State from which shipments are to be made. On receipt of these the secretary of the State Board issues authorized shipping tags at cost. Nursery stock may not enter the State and transportation companies may not deliver unless such tag be attached to each and every box, bundle or bale. Before making shipments secure copy of the law from the secretary of the State Board of Horticulture, Professor Aven Nelson, Laramie, Wyo.

CANADA.— No nursery stock shall be imported that is infested with any of the following insect pests or diseases: San José scale, brown-tail moth, gypsy moth, woolly aphis, West India peach scale, potato canker, gooseberry mildew, internal and external parasitic diseases of potato, branch canker and blister rust of white pine. Nursery stock shall be imported only through the ports and during the periods mentioned: Vancouver, B. C., from October 1 to May 1; Niagara Falls, Ont., from October 1 to May 15; Winnipeg, Man., and St. John, N. B., from March 15 to May 15, and from October 7 to December 7; Windsor, Ont., and St. Johns, Que., from March 15 to May 15, and from September 26 to December 7.

Importations by mail shall be subjected to the same regulations. The port by which it is intended that the nursery stock shall enter shall be clearly stated on each package and notice of shipment must be sent to the Dominion entomologist, Ottawa. European nursery stock and certain other classes of vegetation may in the case of certain ports be allowed to proceed and shall be inspected at point of destination, but must not be unpacked except in the presence of the inspector. Copies of the regulations governing the importation of nursery stock into Canada may be obtained from Dr. C. Gordon Hewitt, Dominion Entomologist, Ottawa, Canada, to whom all inquiries should be addressed.

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